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OCTOBER
1921

VETERINARY MEDICINE

MONADNOCK BLOCK
Chicago

Hookworm Disease In Dogs
By W. REID BLAIR

Nervous Ailments of the Dog
By G. H. LIVESEY

Deficiency Disease Persists on Premises
By A. T. KINSLEY

The Importance of Parasites
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Relapses After Operation For the Relief of Roaring
By L. A. MERILLAT

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VOL. XVI No. 10

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Veterinary Medicine

Vol. XVI OCTOBER, 1921 Number 10

Promises Fulfilled and Unfulfilled

When at Columbus last year, Dr. Glover invited the A. V. M. A. to hold its 1921 meeting in Denver. He made those present some glowing promises—That they would be a mile nearer Heaven than they had ever been before, that the weather would be more pleasant, the scenery more wonderful, the reception by the public more cordial, and the entertainment more delightful than the association had ever before experienced. Colorado made good on every promise. As a vacation, the Denver meeting ranks first for enjoyment.

Regretably, in the matter of program, this meeting followed and probably exceeded the bad precedent set at New Orleans for failure to live up to the announcements.

A program is no less than a written agreement by the association, that if those to whom it is sent will spend the time and money necessary to attend the meeting; the association on its part will furnish them with the information to be derived from the papers listed. Not fifty percent, not nearly fifty percent of the papers promised for the Denver meeting were delivered. Committee reports too, were conspicuous by their failure to materialize.

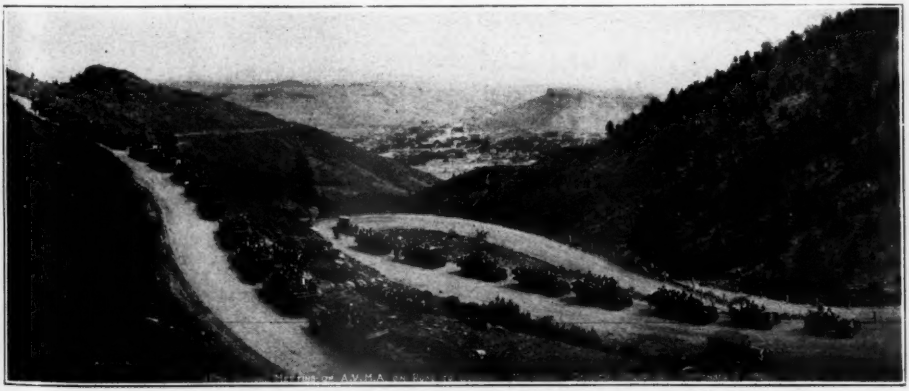
The A. V. M. A. should get back to the days when its printed program meant something. A business house that failed to live up to its promises to the same extent would be shut out of the mails under a fraud order.

The attendance at Denver was about 300. A splendid attendance considering the distance most members of the association live from Denver, the exceedingly high cost of travel and the general business depression.

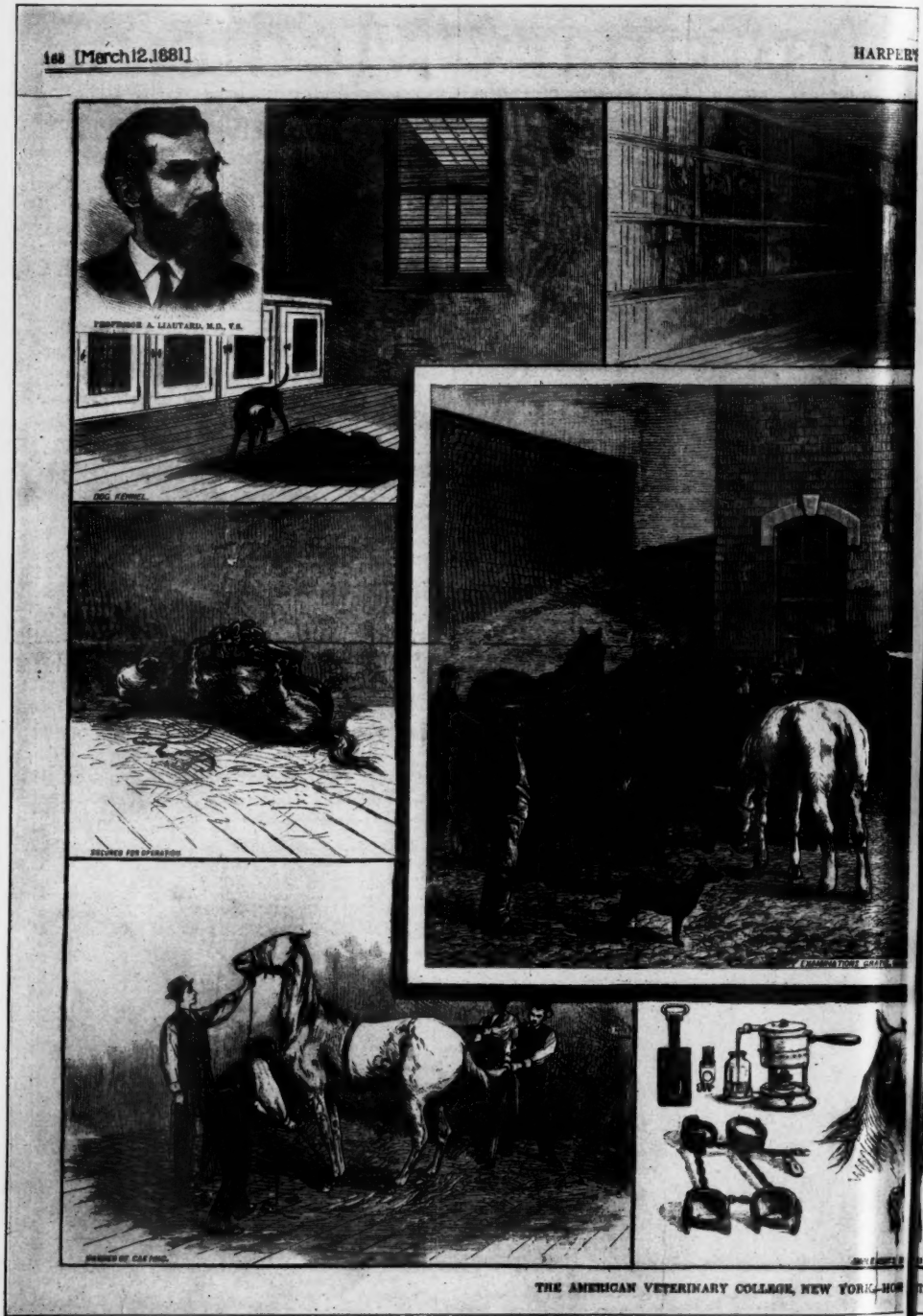
About 190 applicants were admitted to membership, which was good. Nearly twice this number were dropped for the non-payment of dues. During the same twelve-month period the National Veterinary Medical Association of Great Britain gained in membership more than 600.

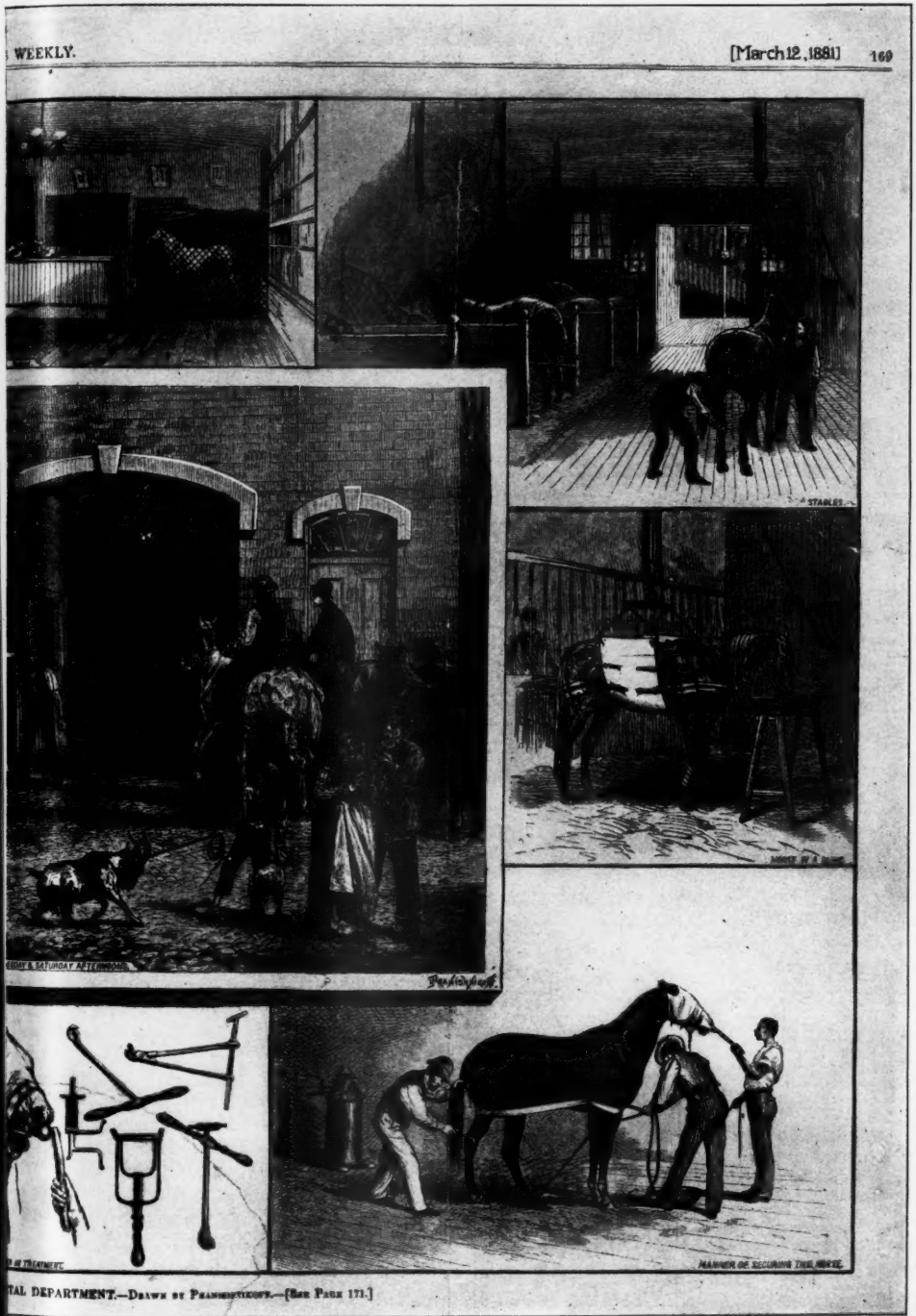
The prediction was freely made about the meeting place that the A. V. M. A. would lose a thousand members during the coming year. It should not be so. Times are not what we should like to see them and perhaps the A. V. M. A. has accomplished all that most of us would like to see among its achievements, but that is not sufficient reason for precipitate action. Pay up your dues. You can hardly be sorry and you might regret it very much if you fail to pay them.

Dr. A. T. Kinsley of Kansas City was elected President. The next meeting will be held in St. Louis—probably.



The Veterinarians Ascending Lookout Mountain.


168 [March 12, 1881] HARPER'S
PROFESSOR A. LIAUTARD, M.D., V.S.
DOG KENNEL.
RETURNED FOR OPERATION.
EXAMINING TIRE. SMITH.
THE AMERICAN VETERINARY COLLEGE, NEW YORK—HOS TAL DEPART



TAL DEPARTMENT.—DRAWN BY PHANTASTICUS.—[SEE PAGE 171.]

Forty Years Ago*

The idea of hospitals for sick animals, where they may be skillfully treated by trained physicians, did not originate in this country. Modern veterinary medicine and surgery dates from the founding of the French school at Lyons, over a century ago. Through its graduates similar institutions spring up all over Europe, and an incalculable amount of good has been accomplished. The establishment of veterinary colleges in the United States is of very recent date. In 1853, and again in 1866, charters were granted by the State of Pennsylvania, but nothing came of either of them. In 1855, an attempt was made to start one in Boston, but that failed also. It remained for New York City to demonstrate the practicability of such an institution, and this has been done beyond all question.

The American Veterinary College, in West Fifty-Fourth Street, was chartered under the general law about six years ago, and is recognized by the Board of Regents of the University. It was established for the education of young men desirous of entering this special field of practice. Its Board of Trustees includes gentlemen well known to the community, and the Board of Faculty is composed of veterinarians and physicians, who teach the different branches of the curriculum, embracing anatomy, surgery, theory and practice of medicine, physiology, chemistry, materia medica, therapeutics, etc. The success of their efforts to establish the best veterinary school in the country is shown by the constantly increasing classes of students.

The Hospital Department of the College is illustrated in our double-page engraving. The central picture shows the bringing of horses and other animals to the clinics for examination and treatment. The means used for securing a horse, for placing him in a sling, for throwing him preparatory to an operation, are all clearly illustrated. The instruments used in treatment are also shown. The stables and kennels are models of comfort and cleanliness. The lecture-room contains the best collection of specimens of anatomy and physiology to be found anywhere.

This admirable institution owes its success largely to the skillful direction and management of its chief surgeon, Professor A. Liautard, M. D., V. S., who has devoted himself to this special work with great zeal and discretion. It may be said that the college is very liberal in the bestowment of free scholarships, one being allowed to each State Agricultural Society, and one to the United States Agricultural Department. A number of States have responded, and thus secured the services of at least one educated veterinarian.

The commencement exercises, held at Chickering Hall on the evening of February 24th, were very interesting. Twenty† young men graduated, and five received valuable prizes. Mr. Jerome Buck delivered the address, in which he praised the work of the College, and appealed to the graduates to pursue their profession with energy and devotion.

COMMENT—All of us, it appears, are pleased by mention of the progress that the veterinary profession has made in the past ten, or twenty years. This theme constitutes the subject for one of the after-dinner speeches at most veterinary banquets; an address of welcome at the opening of a veterinary meeting would not seem like an address of welcome if the honorable mayor did not dwell upon the wonderful advancement of the veterinary profession within his memory.

However, let us not be too cock sure in this matter. Is there a veterinary hospital in the United States today that would be thought worthy of a write-up in a great national weekly, such as Harper's was in 1881? We think not. Is the clinic at any veterinary college at the present time actually better suited to its purpose than was Prof. Liautard's clinic forty years ago? We doubt it. Are the cases of lameness coming to your hospital receiving better treatment than they did at Prof. Liautard's hospital forty years ago? Do you possess any information concerning shoeing or feeding that he did not possess, and do you recognize the different types of colic any more certainly than he did, forty years ago? Are your instruments or means of restraint materially superior to those shown in the foregoing illustration?

*From Harper's Weekly, March 12, 1881.
†Dr. W. Horace Hoskins later Dean of the School was among the number.

Hookworm Disease in Dogs

By W. Reid Blair, D. V. S., New York

Hookworm diseases in dogs is prevalent in the vicinity of New York City, and apparently greatly on the increase among certain breeds of kennel dogs, particularly fox hounds and German Sheepdogs.

Hookworm disease is also known as dochmiasis, uncinariosis and pernicious anemia in animals; and as "sleeping sickness," Egyptian chlorosis and "tunnel worker's disease" in the human. It is always a severe affection. Through the work of the Rockefeller Institute Foundation in some of our Southern states, Porto Rica, and in other countries, the life history of this parasite is now well understood, and in recent years great progress has been made in successfully treating the disease in the human.

Removing Stitches Following Operation on Australian Kangaroo for Tumor at the Base of the Ear.

Germany has spent over $2,500,000, in direct outlay, to control hookworm infection in a few of its mines. The disease has been brought under reasonable control in the mines of Wales and Belgium. It is known to be prevalent in many of the mines of France, Hungary, Spain, Sicily, California, South America and China.

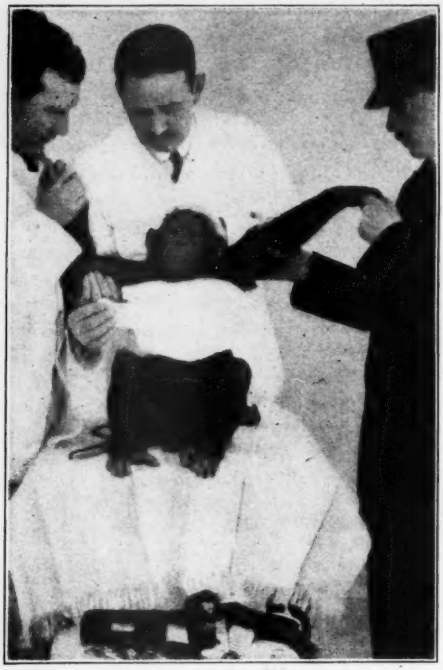
Specimens of the human parasite Dochmius duodinale obtained from Professor Harlow Brooks for microscopic comparison with specimens of Dochmius from dogs, coyotes and foxes, show a marked similarity.

The dochmius or hookworm is a small, whitish, slender worm about one-third of an inch long, and possesses a completely developed intestinal tract, a head bent backwards, with a horny capsule lining the mouth cavity. The male parasite has at the tail end a bell-shaped membraneous, ribbed bursa. The ova of the hookworm segments in the oviduct of the female parasite until it reaches the larval stage. The evolution is not continued further in the intestine of the host, but after their expulsion with the feces, the cycle is completed in the presence of suitable heat and moisture. The period occupied in this development varies according to the environment, but on incubating in water at a suitable temperature an embryo soon becomes visible in the interior, and hatching is completed in two or three days. The essential part that water or moisture plays in the evolution of this parasite shows that infestation probably takes place through the medium of drinking water, and the hosts contaminate each other by scattering the ova of their parasites in the drinking vessels. This shows the necessity of having elevated drinking vessels, so as to reduce the infection of animals from this source to a minimum. One or two animals affected with hookworms can infect a whole pack or a kennel. The disease is usually seen during the spring and summer months; probably because of the more favorable conditions for the development of the ova during these seasons.

The post-mortem changes seen in animals dying of hookworm disease are fairly characteristic and constant, and the following

notes represent a composite picture of a large number of autopsies on young dogs or puppies and foxes:

The carcass has the appearance of general anemia and wasting. Extreme pallor and bloodlessness of all visible mucous membranes. The muscosa of the duodenum and ilium is in a state of acute or chronic catarrh, and at intervals shows areas of deep red hemorrhagic spots, in which the worms, in greater or lesser numbers, are found attached by their mouths to the mucosa.



Treating a Tractable Patient for Pneumonia.

The whole muscular system is anemic, soft and flabby. The blood is lacking in its rich, healthy, deep red color, and hydremic, with a marked deficiency of red globules.

Edema and softening of the lymph glands of the mesentery is a marked feature. Unlike the genus Ascaris, which subsists by absorption of the host's intestinal contents, the hookworm exists by extracting its nourishment directly from the host's blood, by attaching itself to the mucous membrane by hook-like spikes with which its mouth is provided. While the irritation and the loss of red blood cells, caused by the direct attack on the intestinal walls by these parasites, is doubtless considerable, still, I believe severe symptoms are due more to forms of toxic substances eliminated by the parasites themselves; or else by their wounding of the muscosa and thus allowing an opportunity for the invasion of some micro-organism capable of producing a form of toxemia.

Symptoms.—This affection is one that may easily be mistaken for non-parasitic anemia, so that in order to make an absolute diagnosis, a microscopic examination of the feces should be made after the administration of a laxative, which should result in the discovery of ova of the hookworm. These ova are oval in shape and usually divided in 4 to 8 segments.

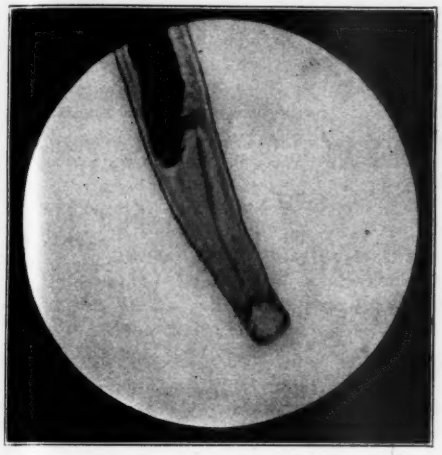
The affected animals, especially young ones under 4 months of age, may suddenly show symptoms of weakness, extreme anemia, and drowsiness, and if urged to move will whine and cry. The coat is rough and starey, the legs swollen and edematous. The bowel movements are frequent, with foul odor, and contain blood stained mucous. Fits or convulsions are not infrequent. The youngest puppies which have died from hookworm, under my observation, were four beagles 19 days old. In this instance the microscopic examination of the feces of the bitch showed her to be infected with hookworm, although she was two years of age and apparently in good health.

It has been my observation that young puppies that have recovered from acute symptoms of hookworm disease apparently acquire a more or less limited immunity, but are, nevertheless, capable of infecting others, and consequently keeping the affection alive in the kennels.

Treatment—In young animals which show acute symptoms of hookworm disease, with great depression, treatment is very unsatisfactory, but occasionally apparently hopeless cases will recover when nourished abundantly with scraped raw beef, milk and eggs, with the administration of tonics such as the triple asenates of iron, quinin, strychnin and nuclein.

Hall's classic researches in the treatment of hookworm shows excellent results in the use of chenopodium, 5 to 10 minims in 3 doses at one-hour intervals, and followed in one hour by castor oil. This treatment is

repeated in one week. In a recent contribution by Hall he reports upon the use of carbon tetrachlorid, and apparently found this drug more effective than any drug he has yet tested.



Head of Hook-worm. Low Power Magnification.

In our hands the following has given such good results that it has become our routine treatment: chenopodium 20 min, chloroform 15 min, syrup buckthorn 2 drams, castor oil 3 drams.

This treatment is preceded by a saline laxative consisting of 30 to 80 grains of Epsoms salt in 2 ounces of water.

This treatment is followed by doses of 10 grains of Abbott's intestinal antiseptic tablets No. 4, containing thymol, morning and night for four days.

The object of the saline laxative is to free the intestine from mucus or other substances which surround the hookworms and to some extent protect them from the action of the anthelmintic.

This treatment should be repeated at intervals of ten days since one treatment, in my experience, is seldom sufficient to effect a cure.

Treatment must be repeated according to the severity of the infection and the efficacy of the drug used. It has been found that two treatments usually cure from 60 to 80 per cent of the infected dogs, but in animals where the infection is of long standing, and the worms firmly buried in the mucus of the intestine, the anthelmintic does not reach them properly, so that further treatment is necessary.

In determining if a cure has been effected the feces should be examined in ten to twelve

Tail of Male Hook-worm. Low Power Magnification.

days after the last treatment. Earlier examinations may give misleading information since negative findings at three days may be followed by positive results in seven days. This is probably due to the fact that the drug exerts a toxic effect on the female worms, causing them to expel no ova for several days after treatment.

When an animal is found suffering from hookworm disease, all the dogs in the kennel should have their feces examined for ova of this parasite, and those found infected should be treated at once before the acute symptoms become marked.

The prevention consists of scrupulous cleanliness of kennels and especially all the food vessels. Sick dogs, or those found harboring the parasite, should be isolated and the feces destroyed. Careful attention should be given to brood bitches before they become heavily pregnant, and if found to be infected at the time of whelping, the breast and perineal region should be clipped and thoroughly washed and disinfected, care being taken that the mammary glands are not left with an unpleasant taste or smell from the use of a disinfectant.

Common Nervous Diseases of the Dog

By G. H. Livesey, M. R. C. V. S.

MANY of the commonest ailments in the dog are of nervous origin, and are not of sufficient importance to warrant the terms disease or illness being applied to them. They are neuroses, and if neglected may give rise to sequelae which in turn may develop into definite illnesses. Perhaps the most frequently seen of these conditions is the biannual shedding of the coat, which of course is a normal procedure. At these times the skin is irritable; evidently a provision on the part of nature to induce the animal to rub and scratch in order to rid himself of superfluous hair and fur. Very frequently the condition for some reason becomes pathological, particularly among pet dogs that live an indoor life.

The condition is aggravated by a sudden spell of unduly hot weather, especially when associated with dry winds. At these times a dog will scratch and rub to such an extent that the owner is led to believe that there is some definite skin disease or parasite causing the trouble; and professional men have often been led to a similar conclusion, for I have had many such cases brought to me which had been professionally treated for eczema and mange, though no trace of such disease was present. Removal of the old coat is all that is required in the way of treatment, though if there has been much scratching and there is a dirty skin, a good bath and the administration of a saline laxative have a wonderful effect in bringing the skin back to its normal condition.

Excitability Due to Skin Irritation

This trouble with the non-shedding of the coat or undercoat is so common that it may be looked upon as one of the most frequent starting points of a large variety of skin diseases; and I think it is well worth while making a special note of it, since if it is recognized early, one may easily cure it, and save no end of trouble at a later date. If neglected or unrecognized, it may lead to some of the conditions I now mention.

An excitable and nervous dog may bite himself raw, particularly on the back, sides and loins, and set up a dermatitis closely resembling eczema or impetigo, both easily cured, and not really comparable with the same diseases in man. A similar dog may scratch until he is no longer able to stand. from leg weariness, or the reflex excitability is so great that he may have a fairly severe convulsion. He is then taken to a veterinary surgeon, who may overlook the real cause of the trouble and treat him for paralysis or merely give him bromide for the convulsion, and leave the real disease untreated. A dog at such times is specially liable to mange and ringworm, and, in fact, all the evils which follow on a dirty and irritable skin.

It is the observation and recognition of these small trifles in a dog's condition that go towards making a man's good reputation; and for this reason I make no apology for dwelling at length on what may seem to some a quite trivial ailment.

The dog's skin is also affected by some kinds of food poisons. I have seen a dog covered with herpetic patches and blotches as a result of eating bad fish, and no doubt everyone at some time has seen cases of heat rash or nettle rash, which is more or less evanescent, and dependent largely upon diet. Such cases are easily treated on general principles.

Falling in a convulsion is also commonly seen in cases of dogs persistently scratching the ear in cases of canker, even when the disease is not far advanced. The convulsion is due to reflex irritation and not directly to the canker. When due to canker, the latter is in an advanced stage, and the middle ear or even the meninges involved. It is difficult to distinguish between some neuroses and acquired habits, for example, constant shivering and trembling such as is seen in Manchesters and Whippets. Who can give a reasonable explanation of this phenomenon?

If a dog has once suffered from subluxation of the patella, he may in future refuse to use that leg unless forced to do so (which in my experience is the best cure), not because it hurts him to do so, but through fear and distrust. The habit is acquired in two or three weeks, and if not tackled early, may

*Read at Annual Meeting National Veterinary Medical Association of Great Britain and Ireland, Ltd., July 26-29, 1921.

last throughout life with consequent atrophy and contraction of the muscles.

Similarly a dog will acquire the habit of coughing. I well remember a terrier who developed a cough which no drugs had any effect upon. He used to cough much as another dog would bark, that is to say, whenever excited or roused to enthusiasm, such as at the prospect of a walk or the advent of a friend. I eventually discarded drugs and tried moral suasion by striking the table with a folded newspaper and scolding whenever he started to cough. The habit was broken in three or four days and never recurred.

Epileptiform Convulsions

Perhaps the most common condition among nervous disorders which the ordinary practitioner is called upon to treat is a state of convulsion or fits. It would take a more learned man than I to describe to you any sure method by which such a differential diagnosis may be made as will enable one to say exactly at once what kind of fit one has to deal with, and of what nervous disorder it is the symptom. Probably to the majority it does not much matter what the cause is, nor does it matter if any other symptoms are present, the case is more or less urgent, and something has to be done promptly, and there is not much variety of treatment usually adopted.

From a scientific point of view and from a clinical standpoint it would be very desirable to be always able to rapidly diagnose the cause of fits, and our methods of treatment would benefit by the knowledge. Quite a number of veterinary surgeons speak of fits as epileptic, but I think this is wrong. Very many fits are epileptiform, but to what extent dogs suffer from true epilepsy has not ever been satisfactorily stated. Personally I do not think it so common, though among a large number of cases a considerable proportion may be judged to be epileptic, if only from the want of evidence of other cause.

Many fits occurring in the course of distemper are almost typically Jacksonian in character. I believe some practitioners are even able to identify "grand mal" and "petit mal" to their own satisfaction, but I have not been able to reach that state of confidence in my powers of observation.

It seems to me that if a dog has fits of an epileptiform type, occurring at irregular intervals, and which do not yield to treatment, and are not concurrent with other known morbid conditions, we may be led to give a guarded diagnosis of epilepsy, and at the same time give a guarded and perhaps not too hopeful prognosis.

As to treatment, arsenic combined with bromides I think gives the best results, but must be continued over a lengthy period.

Convulsions a Sequel to Distemper

Everyone is well acquainted with the fits which occur in distemper cases, but I do not think they are sufficiently frequently recognized as being only one of the many manifestations of the disease, nor is it realized by a great number of us that they often are the first symptom to be noticed at the onset, and the confirmatory symptom in relapses, and that when they occur in relapses, they are the sequel to a broncho-pneumonia which has often escaped notice. Thus a puppy may start distemper with one or two fits, but not show the classical symptoms of distemper for some eight to fifteen days afterwards. Again, a dog that has apparently made a good recovery from the disease may suddenly start convulsions, even from the sixth week up to three months after. If death supervenes or an opportunity of a post-mortem occurs, broncho-pneumonia is always more or less demonstrable.

When these fits come at the onset they are not so dangerous as when following a relapse, and our prognosis may be formed accordingly. Febrifuges form the best means of treatment, and aspirin or spirit etheris nitrosi and aconite are the drugs I find most useful. Bromids are useless, or nearly so, and sometimes merely aggravate. Our aim should be to cure the morbid pulmonary condition.

Convulsions Due to Digestive Derangement

Convulsions are seen as a result of many other morbid conditions, to which I will only briefly allude. For instance, they are seen as a result of skin irritation, as already mentioned, and also as a result of irritation of the digestive tract. Thus they are common in puppies and young dogs as a result of overdosing with purgatives and worm medicines, and also of eating foreign substances, as coal, coke, wood, bones, basketwork, shoes, carpet and such like, and also from the presence of masses of ascarides in the stomach and bowels.

When one is satisfied that one's diagnosis is correct, and that one is not dealing with distemper, bromid may be given, or perhaps hyoscin hydrobromid. It will be time enough when the fits are controlled to get rid of the offending irritant.

I am quite sure that in these cases it is the very greatest mistake (often a fatal mistake) to give a dose of oil, or purge, or a worm dose. I believe more puppies are annually killed by this means than any other. If you want to rid a puppy of worms, choose a time when he is apparently in the best of health and vigor, give him one good dose and have done with it.

Convulsions From Excitement

Fits also happen as a result of over-excitement, or over-exertion, especially in a hot sun. A species of fit is often seen in bulldogs on hot days at shows. Aspirin, antifibrin and caffein are useful drugs in these cases, and may be accompanied by heart stimulants if necessary, but in all cases of convulsions the prime necessity is darkness, rest and absolute quiet. It is a good plan to put the dog in a padded hamper and shut him up in a dark cellar, and leave him alone for some hours, where he cannot hear chattering voices, or have his eyes irritated by bright light.

Convulsion Due to Metritis

Again, as evidence of the result of reflex irritation, convulsions are seen in cases of metritis, and particularly in those troublesome cases of purulent endometritis. It is a curious fact that this affection is generally, in fact, nearly exclusively, seen in maiden bitches, and is more common in advancing years. There is generally some history of former trouble to be gained, and there is also the dog's distended appearance, also the irregularity or total absence of estrum, and these help us to make the diagnosis. It is not necessary to treat these convulsions, but to attack the casual disease by operation of total extirpation of the diseased parts or by medicinal treatment combined with local irrigation and stimulation. This latter treatment is by no means always a failure, and I disagree with those who say that there is no alternative to hysterectomy.

Convulsions Due to Eclampsia, Nephritis, Etc.

Convulsions also occasionally are seen in cases of eclampsia of the suckling bitch. As a rule they are not violent, and may be restricted to convulsive movements, or a sudden stiffening of the limbs, a temporary loss of consciousness, or merely an increased excitability.

I do not know the true cause of eclampsia, but it appears to me to be similar in some respects to milk fever in cattle. The removal of the puppies and the administration of chloral (with caution) and saline aperients soon restores the bitch to a normal condition. It is not necessarily seen in bitches with large litters or in those with a large supply of milk, and I have seen it as frequently in the cat as in the bitch.

Screaming fits in puppies are sometimes called hysterical whether the puppy be male or female. I doubt whether true hysteria is ever seen in the lower animals, unless one of the conditions I have already named be termed hysteria.

Sometimes dogs in advancing years that are affected by kidney disease—nephritis in some form or other, have convulsions, but not often is this symptom seen. When present the symptom is unfavorable, and often precedes coma and death. Other symptoms are always present which enable a diagnosis to be made, such as polyuria, suppression, heart disease, dropsy, asthma, a warty and hairless condition of the back and cataract, or at least filminess of the lens of the eye.

Lastly, fits are seen at the onset or during the course of severe brain or spinal disease, of which I shall have to speak later on, and during the course of specific diseases.

Convulsions Are Merely Symptoms

To summarize my remarks, convulsions are merely symptoms, the expression of disorganized nervous energy, and to treat them rationally one must look for the underlying causes, though at times it is urgently necessary that the animal must be treated for the convulsion by means of some sedative. It would be folly with certain animals and certain kinds of owners to do nothing or appear not to do anything, but at the same time it is folly to dose every case that comes to one's hands with bromids or chloral. For instance, chloral given to a diabetic dog is very liable to cause sudden death.

With so many cases it is imperative to stop the noise of a young dog in a barking or screaming fit. Total darkness and abso-

lute quiet are the best remedies, and one must guard carefully against increasing the trouble by having a tussle with the patient while forcing liquids down the throat, thus not only increasing the excitement, but running grave risk of choking and subsequent pneumonia. Moreover, one runs considerable risk of a bite, which we should take a pride in being able to avoid. A hypodermic injection can generally be managed without much trouble. My advice is generally to shut the patient up in the dark until the convulsive period is passed, then to administer aspirin, antifibrin, or such like drugs in feverish cases, and when the patient is calm and quiet to make a thorough examination to find out the cause, which can then be treated rationally.

Rheumatism or Meningitis

I now wish to draw your attention to another condition which is becoming more common each year, and which I think must have been seen by everyone present more or less frequently. A dog is brought with the history that he is dull, with more or less arched back, depressed head and very stiff gait, and screams out if touched. Sometimes he will cry on first attempting to move, and will snap at and strongly resent anyone trying to handle him.

Or the symptoms may not be so severe—he may only cry out when handled and otherwise seem all right. On the other hand, he may be almost unable to move, and be unwilling even to try and pick up food from the floor, and will obstinately refuse to urinate or defecate. An examination with the hand will demonstrate that he resents light touch, but not firm handling, and that actual progression is not so painful as sudden, unexpected movement.

One or more sets of muscles are in a state of more or less tonic spasm, and a muscular tremor can be detected. The temperature is raised one, two or three degrees, or even more. There is a look of fear and apprehension in the face.

These symptoms vary with the character of the patient. In a lethargic dog they are not so marked, but in a nervous, highly strung dog they are accentuated. This class of case is becoming increasingly common, and it is of interest to debate what is the true significance of these symptoms. One man will say with confidence, "You have an undoubted case of acute rheumatism." Another will say, "You have a case of acute spinal meningitis." Another will say, "A case of chronic pachymeningitis," and I have seen and heard it described as acute pleurisy and acute peritonitis, constipation and other things. Now among all these opinions where does the truth lie?

I confess that I find this a most difficult problem to solve, and as time goes on and I see more cases I can say that I am very reluctant to give a diagnosis until I have had the case under observation for some time. At one time I did not think a dog suffered much from muscular rheumatism, but I have altered my opinion. I also thought that I could at once recognize acute meningitis and pachymeningitis, but I am now not so sure. I think it is exceeding difficult to say what a dog with the above symptoms is suffering from, and I do not give an opinion unless I I am pressed to do so, and then I think I am very guarded in what I say. It is unpleasant if one has diagnosed pachymeningitis and forecast paralysis, and made a doleful story to find the patient rapidly improve and make a perfect recovery within a week! It is equally unfortunate to diagnose muscular rheumatism and forecast a cure, when having relieved the owner's mind, one is informed that paralysis has supervened, and to then find that this will not yield to treatment!

Points of Differentiation

I think one is justified in making a diagnosis of rheumatism under the following conditions: The patient has generally been exposed to chill or over-exertion. It generally occurs during periods of east wind or very damp, thundery weather following on a spell of cold. It occurs when the animal first moves after sleep, and is most often seen affecting one set of muscles, such as the abdominal, or longissimus dorsi, or levator humeri, and latissimus dorsi. There is apparently only pain on movement, particularly sudden movement. The muscles are tense and tender if squeezed or pressed with the fingers, and the whole appearance of the patient resembles that of a man with acute lumbago.

The symptoms rapidly disappear under treatment with aspirin, or other salicylates, or even simple febrifuges, together with rest and warmth.

Some dogs like to have the affected mus-

cles rubbed and massaged, and if this is so, some stimulating liniment containing wintergreen well rubbed in assists in making a rapid cure, and it pleases the owner. Over-exertion and over-feeding should be avoided. It should be remembered that dogs vary greatly in their susceptibility to pain, and the amount of pain cannot be estimated by the amount of crying out that the dog will utter. A very nervous dog like a nervous man with gout or lumbago will yell even if approached. Families and strains of a breed are more commonly affected than breeds themselves.

Vagaries of Meningitis

Almost exactly similar symptoms are seen in sub-acute meningitis, and it is only by observation over a period of time that rheumatism and meningitis can be differentiated.

In sub-acute spinal meningitis the attack is certainly induced by chill or by the liverish condition which is so often seen during thundery weather. It also follows on over-exertion, and particularly over-excitement. Similar sets of muscles are affected, but the symptoms are not so readily relieved by salicylates. The condition is much more obstinate, and varies from day to day.

It seldom remains confined to one part, but progresses either up the trunk or down; thus the onset may be noticed in the neck, and as this gets better the back and loins may be in turn affected, or the reverse. It is better to start in the neck and travel downwards, for if the reverse happens, the inflammatory condition may spread to the brain.

When the back of the head and neck is affected, and particularly if the upper part of the cord is involved, a prominent symptom is the holding back of the head. On the other hand, when the lumbar muscles or lower part of the back is affected, there is more or less loss of the power of progression, particularly the power to go upstairs or to jump. When the abdominal muscles are affected, the legs are drawn under the body, and the patient will not move. In the latter case the abductor and extensor muscles of the hind legs are generally the next to be affected, and when the acute symptoms are over, there remains a partial paralysis, which in a first attack generally soon submits to treatment.

Paralysis a Comman Sequel of Meningitis

Sub-acute meningitis is seen in all breeds. I have seen most cases in terriers, toy spaniels and small hounds, but probably this is because these dogs form the vast majority of my patients. When the disease assumes the form of chronic ossifying pachymeningitis as described by Gray, it is undoubtedly most frequently seen in dachshunds, and the result of two or three attacks is invariably permanent paralysis of the hind quarters. But though a dog may have many attacks of sub-acute spinal meningitis the result is not invariably paralysis. There is, however, an impairment of perfect gait, and evidence of previous attacks may be seen quite clearly in the toe nails. This is worth carefully looking for.

The front of the nails will be found to be worn to a greater or less extent owing to the patient not lifting the foot high enough off the ground in the act of progression. There is dragging of the toe. Also the hair and feather of long-haired dogs will be found to have the appearance of having been cut straight across the toe. Such dogs are quite unfit for long walks or even short walks on the hard roads (but they go all right on grass), for the nail may get worn to such an extent as to bleed and become highly inflamed. Such cases should wear boots, and many of my patients do so.

Lately I have devised more sightly and lighter arrangements for protecting the nails. One useful gadget is to pull over each nail a short piece of black indiarubber tubing of suitable diameter. This affords good protection. Another contrivance I have used is a small metal clip to pinch round the nail, and this is very effective. But good protection may be given temporarily by a bit of lead plaster or "heel ball," and if the dog remains indoors for a week or two, the nails will soon grow, and then only care is needed to prevent the same trouble recurring.

Tuberculosis a Cause of Meningitis.

As to the cause of meningitis I should like to hear the opinions of those who have given the subject their careful attention. After a considerable experience I suggest for your consideration the study of the relation of meningitis and tuberculosis. For many years now I have thought that many patients suffering from meningitis were also the subjects of tuberculosis, but in ordinary practice one is comparatively seldom able to confirm one's suspicions. In the few cases I have been able to properly investigate I have been astonished how often tuberculosis was present.

I think there is no doubt that in dogs both diseases are greatly on the increase. Tuberculosis is far more common than seems to be generally accepted, and it is principally among these dogs that one sees rheumatic or meningitical symptoms. I do not think this is coincidence, but really cause and effect. At least I am sure it is so in quite a large number of cases. I submit this point for discussion, and I hope that it will be investigated by some one equipped with laboratory facilities, as a private practitioner can do so little towards getting exact data in such cases.

Tuberculosis

Tuberculous dogs soon assume a peculiar type of face expression which is almost characteristic, only the faces of those with malignant disease in any way resembling them. When once recognized it is never forgotten, and perhaps may influence me and those who think with me more than it should do in forming an opinion.

I remember well a case some years ago of a dog which I had known well all the nine years of her life. She was frequently with me, and had always been an exceptionally healthy, vigorous little terrier. When about eight years old she began to get apparently rheumatic, had a difficulty in going up and down stairs, cried if moved suddenly, and was tender in the neck and shoulders.

She varied with the weather and sometimes seemed quite well. The attacks became more frequent, and although she was sleek and fat, she began to acquire the tubercular face. I was not very satisfied with her, and could find no physical sign of disease. I asked Mr. Alfred Sewell to see her in consultation, and his diagnosis was rheumatism, and he said he could find no trace of malignant disease, and he disagreed with me as to the possibility of tuberculosis. And of course I had no proof; it was only conjecture. Yet when she was destroyed a few weeks later, she was found to have generalized tuberculosis. Her lungs were a mass of tubercles, some undergoing caseation. I could find no microscopic lesions in the brain and cord. By the way, it is of interest in this case to know that this dog was never heard to cough or wheeze in spite of the state of her lungs. I have had many cases recorded like this, which is fairly typical of all, and I think it is very suggestive.

Peculiar Cause for Rheumatic Symptoms

I will now tell you of another case having all the symptoms of rheumatism which I attended for some two years. This was a small Pekingese. Each attack of rheumatism (which affected the muscles of neck and shoulder loin) responded more or less rapidly to treatment. This dog was much affected by east winds and thundery weather.

One attack early last year continued over a longer period than usual, and after continual cross-examination by the owner, I began to doubt my diagnosis and put this dog on a course of iodids. A partial recovery resulted, but the dog did not get rid of the tendency to cry out and regain the freedom of movement as previously except when under the influence of drugs.

One morning this patient had a digestive disturbance and vomited a good-sized beach pebble. From that day onwards she has been perfectly well and never had a sign or symptom of rheumatic trouble. I have had one similar case in a fox terrier. It is the occurrence of cases such as these that shake one's confidence and make one wonder if one is really gaining any knowledge or wandering in a fog of only half-understood phenomena.

Meningitis Due to Parasites

Before leaving the subject of meningitis I ought to draw your attention to the fact that meningitis is frequently seen as a result of acariasis and other inflammations of the ear when the structures of the middle and internal ear become involved. While this is very common in the cat and in other small animals, it is by no means infrequent in the dog. I think destruction is best in the dog in such cases, though I have had recovery even in cases which were followed by paralysis. In looking for a cause of meningitis one should therefore not neglect to examine the ears and inquire if there is a previous history of canker.

Paralysis Not a Hopeless Condition

Of true paralysis there is little for me to say except that, apart from accidents and injuries and new growths, it follows upon meningitis in one or other of its forms. It is by no means a hopeless condition to treat, and it is worth while persisting with a case for three months, but I think one is hardly justified in carrying on over a longer period. Iodids followed or accompanied by strychnin

is by far the most reliable method of treatment.

The practice of blistering the skin along the spine is to my mind a barbarous procedure, and must cause torture to a restless animal like the dog. I do not deny that some good to the paralysis may result, but I would not allow any animal of mine to be treated in this way, and would certainly destroy it in preference.

The electric current I believe to be useless except as eyewash for the owner. Even if intelligently applied its beneficial use is very doubtful, but it is a pleasant thing to be able, when improvement in condition occurs, to ascribe it to one's treatment (however futile) and not to mother nature.

I learned a good lesson from a patient many years ago. A Pekingese, four months old, had distemper, followed by fits, amaurosis and paralysis. Mr. Sewell also saw this case, and we were both pessimistic over it. I treated it for some four months with no good result. It was encouraged to move about slung in a wash-leather sling, and had everything done for it that money could provide. The owner had many other good puppies and dogs, and I strongly advised that a merciful end should be put to the poor decrepit animal. But the owner had religious or other scruples as to taking life (even of game and fish), and the puppy was kept.

In six months the sight returned and the paralysis quickly disappeared, the dog getting stronger every day until a perfect recovery was made. He eventually took a championship and was the sire of several winners. This case and many other similar has led me to take a less pessimistic view of paralysis following distemper, and I should persist in treating these cases in young dogs for a much longer period than I would paralysis occurring in older and mature dogs after meningitis.

Following a second or third attack of pachymeningitis paralysis is practically hopeless, and it is far better not to keep the patient. Even if recovery were possible, the extreme probability of a further attack justifies us in strongly advising destruction.

Perhaps I should not leave the subject of paralysis without adding that treatment need not necessarily be restricted to the use of drugs. That would be conveying quite a wrong impression. The condition remains for some considerable time, and one has ample opportunity of exercising one's ingenuity in devising new methods of treatment and giving the owner plenty to do. But one should be careful not to set the present-day owner too much to do or to take up too much of her time, lest she tires of the case and one loses the chance of effecting a cure. It is merely necessary to keep her interest gently stimulated and not overtax her patience.

The affected muscles may be beneficially rubbed and passive movements of the limbs carried out every day to prevent atrophy and contraction. The dog may be slung and allowed to just feel the weight of his body on the legs and the latter put in position under him. It is a good plan to tickle the hairs between the toes to induce him to make an effort to kick, and so voluntarily extend the legs. The power to extend the legs and then gradually take some of the weight of the body is generally the first sign of recovery. The owner should be warned against overfeeding. Get the dog as thin as is compatible with strength, as the less weight he is called upon to support the sooner the dog will be able to manage to stand on his legs.

Chorea

The other frequent sequel of nervous disease is chorea. I purposely say "sequel," as I do not believe that chorea exists as a disease per se. It is not the same as chorea in humans, and I do not believe that it is ever seen in the dog except as a sequel to distemper infection. The fact that a dog has chorea is proof and sufficient proof that he has been infected with distemper. It generally (but not always) follows those cases in which convulsions have been a prominent symptom. In the early stages, that is, when it is first noticed, there is always a considerable rise in temperature, and it is then that there is most hope of effecting a cure.

Distemper remedies, and especially febrifuges, also hyoscin, are the most useful, but many cases get well without any treatment at all. If a dog of mine had chorea, I should unhesitatingly destroy it; but of course it would not do to say this to a client. My experience is that if a dog has chorea for two years he will have it for the rest of his life, no matter what is done for him. I have known of cases, however, of dogs which have chronic chorea (but otherwise healthy), having been cured quite suddenly by sudden

(Continued on page 72)

Veterinary Surgery

Edited by L. A. MERILLAT, V.S.

Relapses After Operation for the Relief of Roaring

Within a few years after Williams' operation had been adopted as the best intervention for laryngeal-hemiphlegia it became apparent that many of the subjects, are not improved and others, although at first relieved of the distressing dyspnea, relapse into the original condition after a period of six to eighteen months. For this unfortunate sequel various modifications of the original technic have been tried. Some have thought for a time that operating upon both sides, the sound as well as the unsound half, would solve the riddle while others have advised various changes in the stripping process on the affected side. None have however succeeded in making the operation one hundred percent efficient. There are still cases that fail to respond to the surgeon's magic touch. Some cases have failed to show the desired amount of relief and others without any gross anatomo-pathological complications relapse into the former state of respiratory embarrassment during exertion. The bilateral operation has never been a pronounced success in our hands. That is to say, there has been no perceptible difference between it and the simple unilateral operation on the affected side, and all of those modifications which aim at a greater mutilation of the thyro-arytenodean space to effect a better fixation have invited too many cases of progressive ossification of the larynx, the most unfortunate of all sequels of intra-laryngeal interventions. So, after nearly twenty years of constant observation and experimentation we have been forced to rely upon the unilateral operation done with a minimum amount of mutilation. Our best results have come from stripping the ventrical slightly beyond its borders on the side of the thyroid and vocal cord and slightly within its boundary along the free border of the arytenoid, the object being to leave active connective elements along the arytenoid that will heal harmoniously with the remainder of the wound. When the border of the arytenoid is laid bare it sometimes fails to cover over promptly with a well paved cicatrix in the interum which may last several months, its movements prevent the firm fixation upon which the success of the operation depends. During all of these years although there were scores of cases operated upon the opportunity to hold fruitful autopsies at opportune times have been too few to pile up extensive statistics but of the five cases we have recorded—two of absolute failure and three of relapses after an interval of relief—seem to confirm our suspicions that failures and relapses have but one cause—POOR FIXATION. This report is prompted by a recent autopsy on a relapsing case. The subject was a common draft horse twelve years old used for farm work that would choke down completely when subjected to severe exertion such as drawing a load upgrade, plowing in heavy soil, etc. In severe seizures there was sometime a slight bleeding from the nostrils. The condition had been accentuating for several years. The operation done in the early spring (March) fitted the horse for work on the farm during all the late spring and summer months. There was always some inspiratory noise when pulling hard but the results were pronounced satisfactory. During the late fall months matters become worse and before winter was over the horse was again worthless. Incriminating the winter temperature as the cause of the relapse the owner could not be induced to destroy the animal until after a trial during warm weather, but when the spring months passed without any amelioration a postmortem examination was agreed upon.

The autopsy revealed the expected. ***There was no arytenopexy.*** The cicatrix of the operation had not fixed the cartilage. It was loose, flacid and as freely capable of obstructing the air passage as before the oper-

ation. When an incision was made through the mucous membrane at the base of the epiglottis the finger could be passed freely betweeen the arytenoid and thyroid cartilages. There were no cicatricial adhesions between the two. As this case coincides in every particular with the four other cases of failure we have had the opportunity to examine post-mortem the conclusion is forced that the prevention of failures will be found in a technic that will assure with greater certainty the essential cicatricial fixation of the left arytenoid cartilage, and not in operations upon the right side which is never concomitantly affected. By giving operated subjects plenty of time to heal securely before putting them to work and then avoiding severe taxation of the respiratory organs thereafter there will be fewer relapses, providing the stripping has been carefully done and in the manner above recommended.

In veterinary association clinics we are frequently asked today what if any is the part played by spasms of the larynx in producing the distressed inspirations. Our answer has always been that there is no spasm in ordinary seizures of roaring. It is only when the subject is overwhelmed to the point of fatal suffocation that spasmodic contractions ensue.

PAINLESS EXTRACTION OF TEETH.

Van den Eeckholdt in Annales de Medicine Veterinaire, Jan. 1921, describes a unique and original method of painless extractions under the influence of a local anesthesic injected along the course of the superior maxillary branch of the trigemini through the infra-orbital foramen. After pushing the musculature aside the needle of a hypodermic syringe is introduced into the foramen following the long axis of the nerve trunk and the solution delivered along its course. A mixture of cocain and adrenalin of appropriate strength is advised. His special prescription is:

Cocain hydrochlorate.....30 centigrams
Adrenalin Hydroch. 1-1000 ... 5 drops
Distilled water.....10 grams

The dose is five cubic centimeters injected as far back into the canal as possible. The operation can be done in either the recumbent or standing position, and is facilitated by first making a cutaneous incision. A needle armed with a stylet to prevent choking is preferable. The anesthesia is complete in fifteen minutes and if done aseptically there is no reaction.

It will be remembered that Professor Bemis of the Iowa State College recommended a similar procedure some years ago selecting the maxillary hiatus as the point of delivery for the upper jaw and the inferior dental foramen for the lower. Although manifestly effectual when properly done the seeming hazard of the deep penetration required and the uncertainty of depositing the solution at the proper place seem to have prevented its general adoption.

The Van den Eeckholt method seems more simple and if as effectual as present observations indicate there is no good reason why any veterinarian should henceforth torture a poor brute through the long process of tearing out a molar without having first resorted to this scheme of anesthesia, and there is furthermore no doubt the similar results can be obtained along the inferior arcades by injections into the mental foramen, a procedure that should be equally as feasible.

BITING THE HAND THAT PROFFERS.

Recently a veterinarian speaking to an assembly of his peers engaged in a discussion over the enforcement of some new municipal regulations disgorged the following aphorism from his turbulent interior. "Think of the countless scores of children that have been infected from tuberculous cows and then talk of giving compensation for destroying them. I am for giving them (meaning the farmers) six months instead." (Applause.)

If the plea we are making for a closer relation with the live stock interests is to develop into something more than a mere affectation the fewer sermons we preach from the above text the better for our future and whenever we are called upon to preach the gospel of public health from the veterinarian's viewpoint it would be more consistent in view of the interlocked interests of the two, if our words were more wisely chosen and our tone modulated. Our place is with and not against the interests we serve. Confidence in our good intentions, our loyalty and our fortitude will always be lacking if we allow ourselves to be vacillated by altruistic movements we are not expected to initiate and for which there is yet no popular demand.

It is fundamentally wrong to serve two masters; there can be true allegiance to but one of them.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

Malignant Stomatitis in Horses.

K. Szende in Allatorv. Lapok., 1921, No. 2.

Last summer the author observed several cases of vesicular eruptions in the buccal cavity of horses which was associated with severe general symptoms and delirious (at first the animals rubbed their nose in the ground, then they reared up, ran against the wall, bit the manger, etc.). After the administration of chloral hydrate they quieted to such an extent that a more thorough examination was possible. The buccal mucous membrane revealed round ulcers with grayish yellow borders, increased reddening and temperature of the mucous membrane with salivation. The local treatment with potassium permanganate was successful. Some patients, however, with weak hearts and large bruises succumbed; the autopsy revealed a degeneration of the heart muscle and hemorrhage under the endocardium. A short time before foot-and-mouth disease raged in the same locality.

Contribution to the Knowledge of Post Hemorrhage Anemia in Horses.

Dr. W. Funk in Monat. f. p. Tier., 1920, p. 251.

Reduction of the number of red blood corpuscles following bleeding varies in different individuals, and furthermore it is not accurately dependent on the quantity of the drawn blood. The greater the loss of blood the longer it takes for the regeneration of red blood corpuscles; at times there may be even an increase of the erythrocytes over the previous normal number. The newly formed red blood corpuscles are on the average larger but poorer in hemoglobin. The regeneration of the erythrocytes in horses occurs much slower as compared to other animals.

There is a slight increase in the number of the white blood corpuscles following bleedings. After protracted bleedings there is a change in the neutrophilic blood picture (appearance of myelocytes), the leukocytosis thereby appearing distinctly. According to the author the therapeutic utilization of bleedings intended to dilute the blood is permissible, especially for the purpose of resorptions and eliminations of harmful substances as according to the experiments, the bleeding causes a rapid flow of tissue fluids into the blood during and after the bleeding.

Selected Cases from the Field of Poultry Diseases.

Professor Eber in D. T. W., 1920, No. 50 and 51.

The author had very prolific material at his disposal, covering 4,500 autopsies of poultry during the years from 1911 to 1919. The examinations conducted during the years of the war (2,073 autopsies) have furnished principally the material for the publication, whereas the findings of the previous years were utilized only for comparative purposes. The following affections are described:

1. A general affection which occurred especially in the years 1916 and 1917 in town as well as country flocks and attacked most severely young chickens, ducks and geese; asthenia and cachectic condition of the animals as a result of insufficient and improper feed-

2. A general affection which attacked also the young chicks; asthenia and cachectic condition on account of heavy infestation of the intestinal canal with parasites; pin, round and tape worms. Naming of the species, pathological anatomical changes and control of the parasites is given.

3. Gout of the viscera. A condition which develops as a rule from over-fattening and insufficient exercise. The pathologic-anatomical lesions and combating of the affection is described. Articular gout was observed only in isolated cases.

4. Fatal termination from impaction of the crop, viz., overloading of the crop, which is traceable to excessive ingestion of grain, eating of great quantities of grass, feeding of excessive amounts of wet mashes, swallowing of an excessively large piece of food.

5. Perforation of the gastric wall by foreign body.

6. Congestion of the liver.

7. Poisoning produced especially by phos-

phorus, copper sulphate or arsenical preparations and salt.

8. Affection of the female genital organs.

9. Affection of the respiratory organs and catarrh of the air passages.

Areca Poisoning.

Dr. Heidrich (B. u. d. Veterin. im. Kon. Sachsex, 1920, p. 100).

A flock of geese that were heavily infested with taenia lanceolata and taenia fasciata were given three gram doses of areca nut in powder form mixed with a small amount of butter and bread. The visibly affected geese received only half of the dose. A few minutes after the administration the birds shook their heads severely and threw up the administered mixture under gagging and salivation. One healthy, strong goose dropped to the ground, stretching its neck and legs, and had to be killed. According to Zurn, areca nut is supposed to be the best and safest anthelmintic for tape worms in poultry. This case, however, teaches that a dose of 3 grams is positively too high.

The Toxic Action of Sodium Chlorid in Chickens.

K. Klingebiel (D. T. W. No. 49, 1920).

The lethal dose is 4.5 grams of NaCl per kilogram of body weight, provided, however, that the chickens are not given any water for 24 hours. On the second day they are weakened to such an extent that they are no longer capable of drinking water. If they receive water in the first 24 hours then they become affected only with a slight gastro-intestinal catarrh. The chicken which received 4.5 grams NaCl per kilogram of body weight and on two successive days one additional gram per kilogram, but were given sufficient water to drink, developed only a diarrhea, the droppings containing a considerable amount of mucous. The symptoms of poisoning with salt in chickens are inappetance, pronounced thirst, diarrhea, polyuria, dullness, partial or total paralysis with slight convulsions before death. The autopsy findings are very slight and indistinct and consist of a gastro-intestinal catarrh, paleness and dryness of the musculature, pulmonary edema and hypermia of the liver. The author failed to observe any changes in the red blood corpuscles in the chickens which were poisoned with salt. Klingebiel is of the opinion that the cause of the poisoning is due to the abstraction of the water from all tissues.

Diphtheritic Convulsions in Donkeys.

L. Horvath in Allatorvosi Lapok, 1920, No. 23 and 24.

Two army donkeys suddenly developed clonic-tonic convulsions in the extremities, the muscles of the neck, dyspnea and cyanosis. The mucous membrane of the mouth disclosed diphtheritic deposits of 10 mm thickness. After removal of the membrane the ulcers were treated with potassium permanganate and subcutaneous injections of 7 cc of diphtheria antitoxin were given. The results were striking, inasmuch as in an hour's time the animals got up and the convulsions had entirely disappeared. According to the history children frequently played with the donkeys.

The Palpebral Tuberculin Test in Cattle.

Professor Schmidt in Deut. Tier. Woch., 1921, No. 8.

The intrapalpebral tuberculin test can be readily carried out in cattle. It is best applied on the lower eyelid, the injection being made through the conjunctiva. The dose of the tuberculin varies according to the age and size of the animal from 0.3 to 1 cc. The injection has no bad effects. The intrapalpebral test facilitates the recognition of the reaction by the appearance of distinct typical swelling of the injected eyelid, which lasts for several days and is not subject to accidental influences to the same extent as is the ordinary opthalmic test.

The intrapalpebral test is also adapted for the testing of a great number of animals. While the execution of the test is somewhat more complicated, this is more than offset by the fact that the readings may be undertaken at leisure times and have to be made only once or twice in from 24 to 48 hours.

The author applied this test on 25 cattle; the 15 animals that gave a positive reaction proved on autopsy to be tuberculous; the 10 animals that failed to react showed no lesions of tuberculosis. At the same time on the application of the ophthalmic test 3 animals gave a positive reaction and were found to be tuberculous on post-mortem examination; whereas of 12 non-reacting animals, 10 proved free from tuberculosis and 2 showed lesions. Ten animals affected with tuberculosis gave only a suspicious reaction to the eye test.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

A SALE DEPENDS ON QUESTION OF PREGNANCY.

I am seeking some information. On June 12, 1920, I was called to the ranch of Chas. Plageman, to examine a purebred registered shorthorn heifer to determine whether she was pregnant, or in what condition her reproductive organs were.

Mr. Plageman stated that he had bought the heifer for $1,100 in December, 1919, and that she was supposed to be pregnant, having been bred on August 25, 1919. This would make the calf due the latter part of May or the first of June.

I examined her the 12th of June and found the uterus to be non-pregnant and normal. One ovary contained a yellow body, which I broke down, and the heifer came in heat the third day afterwards, but of course she was not bred, as Mr. Plagman wanted to turn her back to the original owner.

The original owner was notified, but he thinks that the heifer had a calf and it died, and Mr. Plageman is trying to turn her back under false pretensions.

So Mr. Plageman wants me to make a statement (sworn) that according to the findings of my examination that the heifer could not have been pregnant. So here is my question: How long does it generally take for a yellow body to form, and could it have formed during the time that the heifer was supposed to drop her calf and the time I examined her, on June 12th, making not to exceed thirty days, I should think?

Any information I can get to help my client will be greatly appreciated.—J. R. G., Colorado.

REPLY—Answering your question, "How long does it generally take for a 'yellow body' to form?" my observation has been that you can usually feel the beginning of the formation of a corpus luteum on about the fourth day after ovulation, and it is usually very prominent, sticking out from the side of the ovary, on the seventh or eighth day; consequently the heifer could easily have formed a corpus luteum from June 1 to June 12, but if she had calved normally at the twelfth or fifteenth day previous to the date of your examination the recently gravid horn would still be plainly enlarged, and she probably would not have a heat period so soon after parturition. Yellow bodies form only after ovulation.

STANDARDS FOR JUDGING THE BACTERIAL CONDITION OF MARKET MILK.

Milk is necessarily handled under conditions which favor its contamination with various organisms. Because of the ease with which it undergoes decomposition, a large amount of legislation is attempted for its protection.

The bacterial count is the method commonly used as a standard by state and city officials to show whether or not the milk has been handled in such a manner that it is a sanitary product, with reasonable keeping quality.

Recent studies at this laboratory have shown that the pH method of testing milk, a determination of rate of change in hydrogen-ion concentration, is the one that checks most closely with the activity of the organisms that are in an unknown sample. It is the opinion of the writer that, after all, in our laboratory methods we are most concerned in the determination of the keeping quality of milk and this depends upon the activity of the organisms present and not upon their numbers.

The bacterial count of a sample of milk gives but a very rough idea of the time that will be required for the sample to sour, results showing that one sample may have a flora consisting of 25 per cent while another has a flora consisting of 75 per cent inert organisms. It is thus possible that a sample of milk with a bacterial count of 500,000 may have better keeping quality and be a better sample from the standpoint of the consumer than another sample with a bacterial count of 400,000. The former sample composed largely of inert organisms might remain sweet for a number of hours while the latter sample if composed

largely of active acid producing bacteria would soon sour.

Laboratory experiments show that many samples of milk which would be condemned by city bacteriological standards are actually excellent samples when judged as to keeping quality and type of fermentation which takes place upon souring.

During the past few years, many methods have been advanced to determine the bacterial condition of milk. The almost universal tendency of the sponsors of these methods has been to try to make them check with the bacteria count and several good methods have been discarded because of their failure to do so. Examination of a number of these tests shows that some are excellent methods for determining keeping quality of milk, though a failure when expected to give results checking with the bacterial count. Work being carried on at the laboratory with the colorimetric hydrogen-ion determination as a means of determining the keeping quality of milk is an attempt to get away from the bacterial count as a standard. Results, which compared only in a very general way with the bacterial count, would be a keen disappointment to the writer if they checked any closer, as then the method would tell nothing about the milk that is not told by the count.—L. H. Coolidge in Mich. Agri. Col. Quar. Bul.

MILK AS A CONTROL OF INTESTINAL DISORDERS.

Milk in one form or another has been used as a curative agent since very early times, but it is only within recent years that experimental evidence has been brought forth to substantiate its real value in the control of bacterial putrefaction in the intestinal tract.

Bacterial putrefaction has been shown to be the cause of many of our intestinal disorders, due to certain types of bacteria producing toxins or poisons through the decomposition of protein. Autointoxication occurs when the excretory system is unable to eliminate the toxins which are produced.

Experimental work done at this station, as well as at other experiment stations in this country and abroad, have shown that the conditions causing bacterial putrefaction may be greatly improved by the use of some form of milk. This improvement is due to the fact that lactose or milk sugar in the milk is a suitable food for the growth of a different type of bacteria in the intestinal tract. These bacteria are characterized by their ability to ferment lactose into lactic acid which inhibits to a large extent the growth of the bacteria capable of attacking proteins and producing toxins.

Within recent years physicians have been recommending the use of fermented milk in the treatment of many intestinal disorders. Fermented milk is prepared by the addition of a pure culture of lactic acid bacteria known as Bacterium bulgaricum to sterilized milk, and incubated at body temperature (98.50 F.) for a period of from 12 to 24 hours, depending upon the activity of the culture and upon the degree of acidity that is wished. When the milk is treated with Bacterium bulgaricum it is fermented before using; while with untreated milk fermentation takes place after consumption.

Work done at this station has indicated that there is practically no difference in the ability of fermented milk and unfermented milk to change the bacterial flora of the intestinal tract, but results show that the fermented milk produces results more quickly than does the unfermented milk, which Sherman says is due "to the stimulation which the lactic acid gives to the gastro-intestinal organs by raising the acidity of the stomach to a point which aids indigestion, but later stimulates the digestive secretions of the upper intestines, when it is emptied into the duodenum (small intestine).

In experiments conducted at this station, persons suffering from intestinal disorders had their condition improved by a milk diet. If fermented or unfermented milk is to be used as a curative agent in the control of intestinal disorders, it must be produced under the most sanitary conditions, since it is the same type of bacteria that enters into the milk when handled under insanitary conditions and escapes pasteurization, that is associated with intestinal putrefaction in both infants and adults.

There are other factors which must also be very carefully considered before a diet of fermented or unfermented milk is introduced. The addition of milk in any form to the diet may change very materially the ratio of protein to carbohydrates and fats. The protein ratio may be so reduced that intestinal putrefaction, which is dependent on the protein in the diet, is diminished. Cow's milk disagrees with some persons and may be taken only after a proper

system of feeding has been worked out.

Many persons are not able to use fermented milk, because the sensitive condition of the mucous membrane does not permit the presence of lactic acid as found in this milk.

It may also be possible that the symptoms of intestinal putrefaction are not caused by unfavorable bacterial acticity in the intestine, but by the failure to function of certain organs, which can only be determined by the laboratory and a physician.—R. L. Tweed in Mich. Agri. Col. Quar. Bul.

FIVE CHILDREN CONTRACT TUBERCULOSIS FROM MILK OF INFECTED COW.

A farmer in Edgar County, Illinois, had his herd tested for tuberculosis and one cow reacted. Instead of destroying her, the farmer declared the test undependable, removed the ear tag, and sold her to his hired man for wages.

Of seven children in the man's family, five have contracted pronounced cases of tuberculosis. The other two did not drink this cow's milk. A pig and cat also contracted disease after drinking the milk. A warrant has been issued for the original owner on charge of breaking quarantine, and, it is stated, should one of the children die, he will be subject to a charge of manslaughter.

HEIFERS THAT FAIL TO BREED.

Quite frequently I am approached with cases in heifers that come in heat regularly and normally and when bred, do not conceive, but keep on coming in heat.

Do you think that the preparation called yohimbehe or vetol as it is called at times, may do any good. Is it advisable to open the os uteri and irrigating the vagina? Would you please give me some information on this subject.—F. C. M., Ohio.

REPLY—It is not an uncommon thing for heifers to come in heat rather regularly and be bred frequently before conceiving, but as a rule virgin heifers having no severe infection of the internal genitals, unless anatomically defective, usually respond rather pomptly to mild treatment, such as massaging the ovaries and breaking down cysts or cystic degenerated copora lutei. In addition to this it is well to irrigate the vagina and external cervix with a warm normal salt solution daily for a few days before breeding.

My articles in July and August numbers of VETERINARY MEDICINE for 1920 cover this subject fairly well.

As to the use of yohimbin or vetol, the fact that the heifers come in heat regularly would indicate that they are not in need of an aphrodisiac. If, however, the organs seem normal and the heifers fail to conceive after other treatment, it might be well to try these drugs.

INJURY TO COW DURING COPULATION.

I was called to see a cow eight years old that had been bred a month before. This cow was all right before service by the bull. Since that time she has been straining and showing evidence of pain when urinating.

On examination, I found an opening in the bladder on the upper side and the lower opening completely healed up. This is the second case of this kind I have seen. Could the breeding to bull have caused it?—W. H. M., Ohio.

REPLY—Yes, the bull may have injured the cow in breeding her. While injuries to the cow by the bull are not nearly so common as they are by the stallion injuring the mare, still occasionally we have very positive evidence of such things occuring during copulation, injury of the meatus and urethra are the most common.

If they are determined at once they should be treated by warm douching of a mild alkali like boracic acid or sodium bicarbonate. If the straining is severe, injections of warm oil into the urethra and opium will be found of an advantage. Internal medication to relieve the irritation as well as alkalines to affect the acidity of the urine, in severe cases as indicated.

VARIOUS CAUSES MAY PREVENT A BULL FROM BREEDING.

We have been treating a valuable pure-bred polled shorthorn bull in various ways for the past five months for improper erection when in the act of serving.

Though this animal is willing, but cannot serve, as there is only partial erection. The penis is perhaps extended from six to ten inches in an attempt to serve with the end turning downward and flexible.

We have used different alternatives, nerve stimulants and tonics. Elixir yohimbehe compound was tried without effect. The bull is in good condition and feels and eats well at all times.

If there is any treatment you have in mind

that would be effective in this case, it will be greatly appreciated.—J. C. J., Nebraska.

REPLY—The impediments of bulls are not always correctly diagnosed. I recall being called in consultation to see a bull and the history given was very much like that which you give for this bull.

My diagnosis was that the bull had ankylosis of the spine which was interfering with him doing proper service. My prognosis was naturally unfavorable. An autopsy later proved the diagnosis to have been correct.

Just on general principles I would advise plenty of exercise, a diet made up largely of oats followed by full doses of Fowler's solution and nux vomica.

DUPLICATION OF CITY MILK DELIVERY

The question of milk distribution first gained prominence in Michigan through the Detroit Milk Commission. (Special Bulletin 99.) This commission comprised a group of men appointed for the purpose of administering the Detroit milk supply at a time when the milk problem was fast getting into a serious condition.

This commission found that one of the most important questions brought before it was that of duplication of delivery, due to competing companies, and upon further study and investigation of the subject found that a great deal had been written and said, but there was very little reliable information to be obtained that had been gained through an extensive study of the subject.

Because of this and also because the city of Kalamazoo was considering a municipal milk plant and distribution to settle the problem of duplication, a study of milk distribution with special regard to duplication of delivery was started.

The preliminary work was started in the city of East Lansing where a working basis was found, after which the city of Lansing, Kalamazoo, and Flint were studied in the order named. In each of these cities the writer (S. J. Brownell, Dairy Section) rode with every milk wagon in the city, spending as much time as necessary with each route to familiarize himself with its individual problems. The route was then drawn upon a map in colors, showing the streets traveled and the stops made, so that the route followed and customers served by any particular driver in any section of the city could easily be determined. In this way the amount of duplication of the routes or any part of the routes was easily seen at a glance and very easily and accurately determined.

Duplication Inherent and Necessary

The results of the study show that there is a great amount of duplication necessary and that contrary to the views of popular writers on the subject, duplication cannot be determined by merely knowing the number of wagons which pass certain places in the city every day. Neither can any idea of the amount of necessary duplication be determined by comparing the total mileage of a city's streets with the total mileage traveled by all the milk wagons of the city.

Some of the reasons for necessary duplication of delivery are going to and coming from the field of delivery, different classes of milk, geometrical plan of the city, river dividing a city, location of milk plant, size of load, character and condition of roads, time of delivery, labor problems, season of year, railroads and industrial plants, demand for service by the people, and methods of collecting.

After determining the amount of duplication in each of the cities studied, a theoretical plan for a central distributing plant was studied with the plant centrally located and all milk being distributed from the one plant as might be followed in a municipal plan, consideration being taken of the difference in demand in the different sections of the city, character of streets, etc. It was found that it would be possible for the city of Lansing to save the use of three wagons by the theoretical system, while the city of Kalamazoo could save sixteen.

In order that milk should not be unjustly accused, a study of the duplication of delivery of baked goods was made as a comparison, which shows that milk still has a right to maintain its methods of service to the community as long as the present system of distribution of other commodities is in use.

One of the important results shown by the study is the effect of municipal control on duplication of delivery; the amount of duplication being directly proportional to the character and enforcement of the city milk ordinance.

Detailed results of the study will be available in bulletin form in the near future.—Quar. Bul. Mich. Agri. Col.

Swine Practice

Edited by A. T. KINSLEY, M.S., D.V.S.

Advice to Hog Shippers

Some veterinarians may criticise the publisher of VETERINARY MEDICINE for the articles in the swine practice columns on other subjects than diseases of swine and case reports. The editor of this department assumes the responsibility for this believing that most veterinarians should become familiar with the details of swine husbandry, in order to better serve their respective clienteles.

Two litters of pigs are produced annually on the majority of farms in the corn belt of the United States. According to reports about 80 per cent of the spring litter is marketed between October and February and 85 per cent of the fall litters between April and September. The average age of the market hog is about seven months. In case only one litter is produced each year, the average age when marketed is about nine months. The average weight of swine at the time of marketing is from 230 to 250 pounds. A limited number of heavy hogs are sometimes marketed during late winter.

Some feeders are very close students of markets and usually sell at an advantage, but a large number of swine are marketed when they are finished regardless of price. Many feeders claim that it is better to market the hogs when they are finished, even though the market is uncertain, than it is to hold them for an indefinite length of time for a better market. Other things being equal, swine or other fattened stock will make a better profit if they are marketed when they are in prime condition. Excessively fat hogs are not in great demand, neither do they command as high a price as is paid for the prime finished hog that will weigh about 240 pounds.

Graded Lots Bring Best Prices

Farmers that feed only a few swine usually sell to a local buyer. In some communities several small feeders combine and ship direct either to some commission firm or a packer. The combination method of shipping is the better plan, providing the various lots of swine are practically the same size and color and have been finished the same. In some instances the mixing of different lots of fat hogs is objectionable because of fighting. This objection can be obviated by yarding each lot in a separate pen and if necessary partitioning the car. If a combined shipment contains swine of various sizes and colors and in different states of the process of fattening, the chances are that the shippers will realize less if they sell to a local buyer. The top of the market is obtained by shipments of swine that are uniform in size, color and condition. Car lot shipments should be made direct by the feeder to market.

When and How to Load and Ship

The handling of fat hogs for shipment requires considerable care. In hot weather fat hogs should be taken to the loading station in early morning, late evening or during the night. Unless the loading station is a half mile or less, the hogs should be hauled in wagons or trucks that are well bedded and the bedding well soaked with water. Even these precautions will not always prevent heat exhaustions and death, unless promptly treated by the use of diffusable stimulants and cool water over the body and ice packs to the head. The hogs should all be delivered to the loading station in ample time to allow them to become rested and cool before loading. Ample time should be taken for loading to avoid excitement or over-exertion. The car should be bedded with wet sand. Overloading is almost certain to result disastrously. The load for an ordinary 36 ft. car should not exceed 16,000 pounds. It is advisable for an attendant with shipping knowledge to accompany the car. Shippers that sprinkle their hogs whenever it is possible en route have diminished their losses to a minimum. Some shippers provide 4 to 6 ice bags that are suspended from the roof

of the car so that the drip falls upon the swine. By the icing method there was a loss of 15 hogs in 150 shipments. Such measures, that will diminish the losses and make the shipment of fat swine safer, should be resorted to by all shippers.

Feeding and Protection En Route

The winter marketing of fat swine also requires care and judgment. Fat hogs may be driven short distances to the loading station, but they should not be driven when it is extremely cold and windy, because the inhalation of cold air has a tendency to produce congestion of the lungs. When hauling fat hogs during cold weather they should be amply bedded and the hauling should be done during the warm part of the day. Care should be used in loading and the car should be amply bedded with hay or straw. If an ordinary stock car is used the exposed side should be prepared with a cheap grade of building paper or similar material to prevent undue exposure. Thousands of pounds of pork are condemned during the winter because of freezing of the skin and deeper tissues in open stock cars.

Regardless of season fat hogs should be fed sparingly before being loaded. They should be provided with plenty of good fresh water. In long hauls some shippers prefer to give the feed in the car, thus avoiding unloading and loading. If the hogs are not crowded this is probably the most convenient and economical method of feeding. Only a small quantity from one-half pounds of shelled corn or other feed should be given every 24 hours to fat hogs en route to market. Some shippers still believe that the more they can get swine to eat after they arrive at market the greater will be their profits. As a mattter of fact, we believe that the shipper will receive as much for his fat hogs if they do not have a feed at market, the so-called fill, and he will have the further advantage of not having to pay for it.

The greatest losses of swine in shipments are due to pulmonary congestion. This condition occurs in those cases that die of heat exhaustion as well as those that die in the winter shipments as a result of piling up on each other. Some few cases survive the acute congestion stage and later die of pneumonia or are condemned for pneumonia when slaughtered.

Normal Shrinkage Not a Loss of Food

The question of shrinkage has been a perplexing problem to shippers. The usual shrinkage on an ordinary shipment, requiring 30 hours or less, is about 5 pounds for a 200-pound hog. A larger hog will shrink slightly more and a smaller pig will shrink less. Shrinkage is due to normal elimination and in an ordinary haul requiring 30 hours or less there will not be any shrinkage in flesh, in other words, a 240-pound hog will shrink approximately 5 pounds in a 30-hour shipment, but the 235-pound shrunken hog will actually dress out as many pounds of pork as it would if slaughtered before shipment.

ACCUMULATION IN THE CUL-DE-SAC OF SHEATH OF BOAR

Many cases have been reported of disturbances incident to accumulations of urine, calculi and other materials in the cul-de-sac of the boars' sheath. The sheath varies in length and is incompletely divided by an incomplete circular band into a narrow posterior portion and a wide anterior portion. The mucosa lining the posterior portion is more or less popular and contains lymphoid tissue. The mucosa of the anterior portion is composed of a pavemental stratified epithelium. There is a cul-de-sac located in the upper dorsal portion of the sheath. This cul-de-sac has a small circular opening located from 2 to 3 inches posterior to the opening of the prepuce. The cul-de-sac, when full, extends from near the preputial opening into the posterior narrow portion of the sheath.

Accumulations in the preputial cul-de-sac produce a noticeable enlargement of the sheath and may interfere with urination and protrusion of the penis. Because of the small opening of the cul-de-sac, urine or other substances that have accumulated in it are usually retained and may decompose and produce irritating substances resulting in inflammatory disturbances and adhesions. In those cases in which there has been an accumulation for some time there may be a constriction of the preputial opening.

The conditions resulting from accumulations in the preputial cul-de-sac that have existed for a short time can be overcome by removing a section of the anterior inferior portion of the cul-de-sac wall. This is not a difficult operation. Restrain the animal on his back in a V-shaped trough. The instruments consist of a small scalpel, blunt pointed bistoury or scissors and two forceps or hemostats. They must be sterilized. A

small speculum may be of service for dilating the preputial opening. The cul-de-sac should be firmly grasped by a forceps and if it is possible to locate the circular opening into the cul-de-sac the bistoury or scissors can be inserted and a transverse incision from one-half to one inch wide made and continuing the incisions forward until they meet at the anterior extremity of the cul-de-sac, thus removing a V-shaped section of the inferior cul-de-sac wall. The accumulated mass can then be removed by gentle massage and by the use of some mild antiseptic as an irrigating agent. The removal of an elliptical section of the inferior cul-de-sac wall by the use of scissors would, no doubt, produce the same results.

In the long standing cases in which there are adhesions and a construction of the preputial orifice it will be necessary to overcome the adhesions by blunt dissection and it may be advisable to make an incision through the upper portion of the prepuce, thus enlarging the preputial orifice.

HOW THE VETERINARIAN MAY SERVE HIS COMMUNITY

A veterinarian can render a service in his community by advising with swine feeders on the following:

1—The size of hog that commands the highest price, viz., about 240 pounds. Some packers will pay a premium for 280- pound hogs during the winter, but it does not take many to supply the demand.

2—The raising of one type of swine in a community and especially the small feeders in order that they can combine their lots in a single shipment and have them uniform. The purchaser of stockers should be advised to buy uniform pigs.

3—Proper handling while marketing to prevent losses from heat, pneumonia and freezing.

4—Give detailed information relative to the feeding of swine while enroute and at market. A large feed just before hauling to the loading station or if given in the stock yards pens usually results in digestive derangement and excess shrinkage. The fill at market centers is of no value to the swine, and is an added expense to the shipper. Advise against this practice.

5—Explain shrinkage in detail. It is the result of natural elimination and unless the shipment is enroute for several days and improperly handled there will be no loss of actual flesh.

DEFICIENCY DISEASE PERSISTS ON PREMISES.

I am writing you for some assistance in diagnosing and treating a herd of spring pigs which I examined last evening.

Some four years ago this fall, the farmer in question bought six or eight 150-pound shoats for the feed lot. Soon after he got them they began to get wabbly on their legs and to gradually get thinner in spite of good appetites, till he finally lost one and he sold the others. At that time, no one seemed to be able to make any definite diagnosis.

During the next two years, he had two or three affected in the same way each year. Then last year, as it seemed to be some infectious trouble, he kept the young pigs out of the old hog pen and they did well. Then along in the summer, he put three young boars into the pen, and it was only a few days till one of them showed the same symptoms, wabbly gait and loss of flesh in spite of a ravenous appetite.

He then took one of the boars which was apparently all right out of this pen and turned him with the gilts for breeding. It was but a few days till this boar showed the same trouble and soon there were three of the gilts similarly affected. As they weighed around 225 pounds then and were marketable, he loaded the whole bunch and took them to market, selling every pig he had on the place. He then cleaned the old yards and pen to the best of his ability. He has a fine grove and meadow for the pigs to run in.

Last winter, he bought two pure-bred Poland China sows and in the late spring they had 18 fine pigs. Now they average about 85 pounds in weight and are very fat and round. They have been doing just fine till three or four days ago, when one showed the old trouble. They have been kept out of the old pen all the time. Last evening when I examined them, I found the following symptoms:

The bad one was one of the finest pigs and has been showing trouble in walking for three or four days. His appetite is good, but he is beginning to get gaunt. He looks bright in the eyes, manure is normal and temperature 103.6° F. His respirations were normal

and he was apparently normal in every way, except he lay down most of the time. When he was driven up, he would run off a short distance with a very short stubby gait. It seemed to hurt him a great deal to use his feet and legs. This one is worse in the front; those last year were affected most behind.

Upon close examination there seemed to be no deformity of the feet or legs, and they were not sensitive to the touch. When he eats he will get down on his knees, and finally to his chest, and lay there eating greedily. Of the remaining members of the herd, there are five more now which stand in front like a knee sprung horse. They are a little stilty in gait, and soon lay down on their chests to eat. They do not seem to be particularly sore in the carpal joints, but are knuckled over quite noticeably. The owner says this is the way they all start. They gradually get worse and more emaciated till they die after three or four weeks. So far, he has never had any of the older hogs affected, and they have always been pigs in good condition.

I hope that you can make a definite diagnosis and suggest means of preventing this trouble reoccurring in this place every year. —H. L. McM., Iowa.

REPLY—It is certainly unfortunate that you have not been privileged to conduct an autopsy on some of the affected pigs on the farm that you have mentioned. The general description, as given, would indicate in every particular, excepting one, that the difficulty is due to some nutritional deficiency. The one exception consists of the fact that one of the three boars turned out with gilts developed the disease, as did also three of the gilts.

From your letter, I suspect that you did not see this instance and perhaps there is some discrepancy in the description of the cases by the owner.

I would suggest that each of the pigs in question be given one-half ounce of codliver oil twice daily, also that some good mineral tonic containing phosphates and lime be mixed with their feed. I believe it would be advisable also to administer santonin capsules to each of the pigs after properly dieting them, thus removing any intestinal parasites that may be a secondary factor in the condition.

From this line of treatment you will readily understand that it is my judgment that the pigs in question are affected with some deficiency, perhaps due to the absence of vitamines or mineral salts, or both, and that by the use of codliver oil and minerals this defect will be corrected.

ERRORS OF JUDGMENT IN THE VETERINARY PROFESSION

"We learn wisdom from failure much more than from success. We often discover what will do by finding out what will not do; and probably he who never made a mistake never made a discovery."

When one considers the limits of human skill it is not surprising to find that mistakes are made in every walk of life.

Errors of omission and commission occur in spite of all precautions, even amongst those who have reached the "cakes and ale" stage in the learned professions. In the veterinary profession there are special reasons to account for the commission of errors; these include the impossibility of gaining any information from subjective symptoms, and of obtaining the correct history of a case in many instances. Diagnosis has to be based on an observation of the symptoms presented, and to appreciate these symptoms and to draw correct deductions therefrom, requies considerable clinical experience and a careful training in the art of observation. As might be expected the majority of mistakes occur in connection with the subject of diagnosis, therapeutical errors to a large extent depending on an erroneous diagnosis.

Errors are also met with in surgical diagnosis and in the performance of operations, and in connection with the examination of horses as to soundness.

Some practitioners deny that they ever make mistakes; in fact, they adopt a stoical attitude if such a subject is mentioned. In their junior days they may have been guilty of some "errors of judgment," but having advanced to the Sir Oracle stage, they assume the cloak of infallibility

Not only to their confrers do they pretend to be incapable of committing errors, but also they pose as paragons of perfection before their clients, and are able to persuade them that "There is no mistake; there has been no mistake; and there shall be no mistake."—E. Wallis Hoare, F. R. C. V. S., in the Veterinary News.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

China Tree Poisonous

The two following queries have recently been received.

Dr. H. A. Burton of Arcadia, Louisiana, sent the following letter with specimens of the china tree (Melia azedarach).

"I am sending under separate cover by parcel post, some young leaves and blossoms and some last year's berries from the china tree. I am told that the berries are poisonous to birds and hogs, but that they do not seem to have a poisonous effect on other animals. Some of the people in this section feed a limited amount of the berries to their horses and mules in the spring, saying that it acts as a tonic. The berries have an intoxicating effect on birds, which eventually kills them. I am also told that they affect hogs likewise.

"This morning I was called to see a hog about eight months of age that is pastured, with other hogs, in a field where china berries are plentiful. This hog showed symptoms of intoxication; staggering gait, unable to walk over a few feet at a time, and on falling the muscles of the hind quarters and sides spasmodically contracted similar to convulsions from strychnin poisoning, temperature and respiration were normal. On lying down the hog was perfectly easy and appeared to be sleeping, although easily aroused. I noticed other hogs eating the berries. At this time of the year the berries are falling to the ground and this year there is an enormous amount of them.

"I noticed an article in the Journal of the A. V. M. A. by E. D. King, Jr., of Mobile, Ala., in which he classes the china tree as Meliocea family, Melia azedarach, poisonous principle, mangrovin.

"I have not lived in the South long and am unfamiliar with poisonous plants of the South. I would like to have further information on this subject as to susceptibility of the different domestic animals to the poison of the china berry, treatment, etc. I am a reader of VETERINARY MEDICINE. An early reply would be greatly appreciated."

Dr. M. G. Smith of Orangeburg, S. C., writes:

"I am mailing you under separate cover some china berries from chinaberry tree, which is very common in the Carolinas. I would thank you to let me know through the columns of VETERINARY MEDICINE what poison these berries contain.

"I have had several cases of poisoning in hogs from these berries this spring. It seems that hogs that have been accustomed to the berries all along are not troubled with them, but when they are first put into a field containing these trees the hogs eat considerable quantities of them and sickness, and often death, follows.

"This condition is marked by inappetence, constipation, with blood stained feces, stiffness and sometimes loss of co-ordination and nervousness. The temperature has been normal in all cases examined by me. Only one case was autopsied in which a gastro-enteritis was observed. Death usually occurs in from 24 to 48 hours."

REPLY—The china tree is a native of China and India, and is now extensively cultivated in warm countries for its beautiful form. It is variously known as the Pride of India, Pride of China, Bread tree, Holy tree, etc. It belongs to the family Meliaceae, a family containing the mahogany and the West Indian cedar tree (Cedrela odorata), the wood of which is much used for making cigar boxes. The fruit of the china tree is green and very astringent, but when ripe it is yellow and sweet. Upon drying it becomes purplish and black It long retains its fleshy character. The berries and bark are used in medicine. In ordinary doses the bark acts as an anthelmintic, cathartic and an emetic, in excessive doses as a narcotic resembling that produced by spigelia of the South. The fruit is said to contain a toxic substance Mangrovin. Professor Henry Kraemer in his Pharmacognosy makes this statement: "It is said to produce an intoxicating effect upon robins and sometimes is sprinkled on clothing in order to prevent the development of moths. The dried berries are also used much as those of Cocculus,"* to destroy vermin. I am quoting also from the article by Dr. King.

Practitioners living in the South can profitably consult the article by Dr. King.

*Journal of the American Veterinary Medical Association 57:311.

ALSIKE CLOVER

Dr. John Dunn of Barrie, Ontario, sends the following letter and sample of alsike clover:

"This day I am sending you under separate cover a specimen of hay. I was called in to see a patient; brown mare, 7 years old, with paralysis. I considered that this animal had had some form of poisoning. The owner at once came to the conclusion the hay which he had bought a short time before had caused it. Though the hay has considerable mature alsike seed it has sufficient to cause paralysis which would not respond to treatment?"

The alsike clover hay was in good condition. I could detect no moulds of any kind in it. It is well known that alsike when pastured produces a dermatitis which has frequently been investigated. The first American account was by Jacob Moses and A. M. Harcourt of Tennessee Agricultural Experiment Station. In Europe and New South Wales I had an account in VETERINARY MEDICINE.* I do not think the clover could have caused the trouble. For the benefit of the readers of VETERINARY MEDICINE I am giving some of the symptoms observed in this kind of poisoning.

"On the skin are inflamed areas, appearing at first as more or less rounded vasicular swellings, varying from one-half inch to five or six inches or more, in diameter. The hair over the affected areas stands erect, and has a dull appearance, indicating loss of vitality. Later the skin becomes hard and puffed out, as the result of the formation of pus underneath. Finally, the deadened skin is cast off, leaving a deep, raw, angry-looking ulcer, which eventually heals, with the formation of a conspicuous scar, covered with more or less white hair. These changes in the skin may occur on any part of the animal, but especially on the limbs, body and croup. The eye symptoms consist of a marked conjunctivitis, with swelling of the eyelids, sensitiveness to light, and a watery discharge from one or both eyes. The mucous membranes of the mouth become inflamed (stomatitis), ulcers form and the animal slobbers and refuses to eat. The advanced cases are frequently accompanied by emaciation. The tongue is usually affected, and the inflammation may extend throughout the entire digestive tract. The functions of the liver may be disturbed, and a yellowish (jaundice) coloration of the tissues follows:.

"In such cases symptoms of colic are not uncommon and the respiratory tract may become involved and pneumonia develop. Some observers in other countries have noticed marked nervous symptoms, such as excitement, convulsive movements, staggering gait, and paralysis of the throat, with inability to swallow, the paralysis at times become generalized, the animal getting down and being unable to rise. In the cases observed in this state, the nervous symptoms, except for the general depression, were not very noticeable."

*12:789—871.

COWBANE

Dr. O. M. Enger of Holcombe, Wisconsin, sends the following communication:

Under separate cover, I am sending you a few weeds which I think are poisonous. I am a reader of VETERINARY MEDICINE, and I am taking advantage of the opportunity offered by you for the identification of specimens of supposed poisonous plants.

Habitation—Swamps and low land.

Symptomalology in Cattle—Loss of equilibrium, convulsions, constipation, pulse hard and full, temperature normal, mucous membrane congested. One cow three weeks after parturition has been affected three times. Attack lasts 8 to 10 hours and requires 24 to 36 hours to make a recovery. Treatment has been as follows: Purgation, and hypnotic drugs, used magnesium sulphate and fluid extract of gelsemium. The cow above mentioned was seen eating the weed sent you and in a few hours she became sick. After due consideration to differential diagnosis. I have been of the opinion that the weed in question is the causative factor. Your efforts will be appreciated.

The plant sent is cowbane (Cicuta maculata) and during the fall, winter and spring the fleshy roots of this are deadly poisonous. The flowers of this plant are white and the leaves are large, ample and divided. The plant grows in marshes and low grounds. During the summer the plant is not as poisonous as in the winter, spring and fall. A very small portion of the root at the times indicated is sufficient to kill a man. Larger doses are required to kill an animal. There is some evidence also to the fact that persons coming in contact with the plant during the summer, especially when they are perspiring, get a form of dermatitis, and in some cases poisoning has been produced by the absorption of the toxic material in this way. In human beings the symptoms are at first pain in the bowels, vomiting, and then convulsions in the form of violent contractions and distortions. Eyeballs and eyelids are mobile and the pupils are widely dilated. There is frothing at the mouth and nose. The poison in the plant is a substance which has been described as cicutoxin—an uncrystalized bitter body occurring as an oily, aromatic fluid.

The symptoms described by Dr. Enger do not quite correspond to those given for this plant but the fact that the cow ate the leaves possibly accounts for this action.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 percent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

Probably a Parasitic Infestation

Under separate cover I am sending you two samples of bowel from two pigs. The one tied off does not contain any parasites that I know of but the other contains a parasite I would like to have identified.

On May 23rd the owner came for some medicine for pigs that were scouring, they had just been weaned so I gave him sulphocarbolates compound (Abbott) which helped some of the pigs but not the smaller weaker ones. On May 30th he returned for more and I gave him more of the same. On June 6th he called and said the pigs were no better and asked me to call and see them. I killed one pig and held a postmortem examination and the only thing abnormal that I found was many worms of the species sent in the package. I advised treating for worms and he came in and got capsules containing chenopodium oil, naphthol, oil of wormwood, aloin, bicarbonate of sodium and calomel and gave one to each pig (wt. 25 to 60 lbs.). June 11th he called and said he thought they had cholera and wanted them treated so I went out and treated about sixty in one pen. Several of which were very weak and scouring. We then went to another bunch of eighteen and were about to start on them (they were all sick) when it began to rain. I then noted a dead pig thrown out of the bunch the evening before so I posted it and found worms (ascaris suum) in the nose, mouth, throat, bile ducts and bowel. I would roughly estimate the number to be near 100. The pig weighed about 30 lbs. I advised not treating with serum and virus.

This morning, June 20th, I called and found three dead pigs of the bunch treated on June 11th with serum and virus. I posted these three and found no petechia anywhere but the mucous membrane of the bowel was covered with a dirty caseous, chocolate tinted exudate.

One pig had five ascarids, another had many of the small worms but the other had only the inflammation of the bowel shown in the specimen. In all the kidneys showed a darkening of a portion but the lungs were normal.

Can you help me with this? I am going to put them on copper sulphate for a bit and see if I get any improvement.—L. B. H., Ohio.

REPLY—The specimens contained a number of Gigantorhynchus hirundinaceous or Echinorhynchus gigas. The Serosa of the intestine showed many of the typical shiny nodules described by Kinsley (Swine Practice, page 121).

This parasite is a difficult one to dislodge. Kinsley advises long continued treatment with creosote alternated with copper sulphate.

STREPTOCOCCIC SEPTICEMIA IN GOATS

I am sending you, by parcel post, a blood sample taken from a two-year-old goat that died today.

My client has lost about 100 head all with the same symptoms and as he speaks very poor English it was rather hard to get a record of the symptoms. He says they cannot stand any hot weather, as they dislike to go out in the sun and seek shade at the first opportunity. They try to avoid cold also and gather around a hay pile at night when brought in to the corral. They are drowsy for a day or two and then are found dead under a mesquite bush.

I found little in the postmortem examination to aid in diagnosis. There seemed to be some thick mucus in the larynx of nearly the consistency of pus. All mucous membranes were very pale and those of the eye being nearly yellow. There seemed to be no internal inflammation in intestines, liver or kidney. The gall bladder was distended to about twice its normal size. There were not enough worms of any kind to matter.

I suspect hemorrhagic septicemia but have never seen this condition in goats. At least I have never recognized it in these animals. All organs were nearly normal but there was something like a carcinoma on the pericardium, a dark liver-like lump about as big around as a dollar, just attached on the outside of the pericardium. I don't think this had anything to do with the animal's death, as my client opened several others when they first took sick, three weeks ago, and never saw anything like this. The urine and feces were normal.

I had the pasture and water changed and gave 30 cc. Flavisol intravenously to the other sick one he brought. This man has his range high up in the mountain so he only packed two sick goats over the mountain on a burrow.

Any help in diagnosis and suggestions as to treatment will be greatly appreciated.—A. J. D., Arizona.

REPLY—The blood sample contained a great number of chains of streptococci, but no bipolar organisms.

Therefore the only diagnosis that could be made from this examination would be generalized septicemia. Flavisol intravenously is the indicated treatment for this.

CALVES LOST FROM INFECTIOUS ABORTION

In separate mail I am sending three samples of blood for sero-logical test for bovine infectious abortion. These are all heifers and carrying their first calf except that the heifer Princess Royal has already aborted about three months ago at about seven months. The other heifers are showing signs of abortion as the udder has been filling up quite rapidly and they are not due to calf for two months yet. The owner has lost two other calves from this herd, one from pneumonia and one from calf scour which I attribute as a result from infectious abortion. These heifers are isolated from the remainder of the herd. Thanking you for any information you may give me, I remain.—G. S. P., Ohio.

REPLY—From the laboratory findings and even more from the clinical history that you give, it appears you have to deal with infectious abortion, and I recommend the use of abortion bacterins at once.

I suggest that you send samples of serum from all animals in the herd, and in doing so, please separate the serum from the blood clot, and send only the clear serum.

Completment fixation test for contagious abortion resulted as follows:

Cow No. 1—Weak positive, doubtful reaction.

Cow No. 2—Positive reaction.

Cow No. 3—Negative reaction (this blood was received hemolized and contaminated. On this account the negative finding is not dependable.

CONDITIONS SIMULATING A SERUM BREAK.

Under separate cover I am sending you a portion of a small intestine and a portion of a large intestine taken from pigs. Also some blood serum from the same pigs. These pigs were given serum and virus and in six days, came down with a very virulent disease. I would like to know what it is. Very profuse scours, inappetence, weakness and then die in a few days. Have lost about sixty head. Resembles cholera.—C. W. L., Illinois.

REPLY—Bacteriological examination of the blood sample showed numerous streptococci, but no other pathogenic organisms were present. The intestinal specimens also showed quite a number of streptococci and gram-negative bacilli of the colon type.

Since we have no other organs, such as the

heart, kidneys, lymph glands, etc., for investigation, we cannot make any conclusions regarding hog cholera. However, we are inclined to believe that the pigs may be suffering from a mixed infection, probably pig scour, and recommend the use of bacterins in this herd. We believe that better results will be obtained from the use of an autogenous bacterin. This on the assumption that you are satisfied that a sufficient quantity of a potent serum was properly administered to these pigs.

NON-TUBERCULOUS ABSCESSES OF THE UDDER.

Am sending under separate cover specimen of pus from abscess in udder of a registered cow. This is one of several abscesses which have appeared in this location from time to time.

I have suspected tuberculosis in this animal for some time, although she did not react to intradermal test 60 days ago. Eight in this herd of fourteen reacted positively at that time.—W. W. C., New York.

REPLY—No tubercle bacilli were revealed by a bacteriological examination of the specimens of pus that you sent. However, many streptococci and diplococci were present.

Since abscesses of this sort have been recurrent in this animal, we believe intravenous injections of Flavisol would be helpful.

LYMPHOGENOUS LEUKEMIA IN A FOWL

I have sent you a specimen alive—from a flock of chickens, from which propably two dozen hens have died. None of this year's hatch has as yet become affected. The affected hens were all hatched from eggs obtained from a distance. The owner says that the comb on those dying has so far always turned black before death. The appetite has always been good and the chicken gradually becomes lighter in weight. The tuberculin test as applied by me on this bird gave a negative reaction.

The feed apparently was wholesome, good in every way. Green forage of blue grass, cow peas, and general field grasses, with corn and wheat for grains.

This lady was given her hens "Rawleigh's" Poultry Tonic, which she no longer does.

Do as you please with the specimen, call on me for a sample of said tonic if you please, and let us have your thoughts on this.—D. L. T., Illinois.

REPLY—The chicken was received in apparent health and had a good appetite. After being observed for several days, it was killed for postmortem examination.

The bacteriological and pathological findings were negative, except for a marked anemia of practically all organs. A differential blood count showed a marked lymphocytosis and an increase of eosinophiles and basophiles, the typical blood picture of a lymphogenous leukemia.

I should be very glad to receive some more birds from this flock and to carry the investigation further. It seems unlikely that the ailment from which this bird was suffering is the same as that affecting the hens in this flock that have died.

MIXED INFECTION BACTERIN FAILS IN MIXED INFECTION.

I shipped you today the lungs, heart and one kidney and a section of liver from a hog. I would like a report on your findings.

This herd originally had 47 in it; there are only 37 left. The first symptom is a very slight jerk at each breath. This gradually grows worse till death. I have posted several and have found nothing but the same pneumonia lesions shown by this one. The temperature runs 103° to 104° F. and they have a good appetite till within about 24 to 48 hours before death when they seem to pant so much that they cannot eat. It has been a little over two months since the first one was taken sick and there will be intervals of two or three weeks when they are apparently well then one or two will sicken and die and then another spell will go by with them apparently healthy. They have a nice dry pasture and are fed on ground oats in a self feeder and whole corn from the crib. I have two other herds where they are the same way. We have always isolated the sick ones and disinfected the place and have used mixed infection bacterius on them but with no success. If it is possible I would like to know what kind of pneumonia it is.—V. C. W., Iowa.

REPLY—Bacteriological examination showed numerous bipolar organisms of hemorrhagic septicemia, also stretptococci and diplococci.

I believe the hogs are dying from mixed infection. Notwithstanding your disappointing results from one mixed infection bacterin, that

is the treatment indicated. Better results in cases of this kind may be expected from an autogenous bacterin.

CLINICAL EVIDENCE OF HEM. SEP. NOT SUPPORTED.

I am sending your laboratory department specimens from a cow found dead in pasture several days ago. These cattle have been pastured on same land for three years. The soil is sandy but the animals have access to a cedar swamp. No animals were ever lost before on this pasture. This animal was apparently in good health the day previous to its death. The owner was within ten rods of it when it died. It was not bloated very much nor did there seem to be a diarrhea. The brain was normal except for a slight congestion of the small vessels. The organs I am submitting all show hemorrhages of various kinds. You will notice even the lining of the trachea was very hemorrhagic.

Upon opening, the muscles showed no abnormal condition as in black-leg. I don't expect you will be in a position to tell me exactly what the trouble is, but the owner would certainly appreciate some information regarding the cause of its death.—I thank you. —C. F. L, Michigan

REPLY—The clinical history indicates hemorrhagic septicemia, but bacteriological examination of the specimens does not support this view, since no bipolar organisms were found, nor were any other pathogenic organisms present.

Laboratory animals were inoculated and remained well. A large number of saprophytes were present, undoubtedly from contamination of the specimen.

LOSSES AMONG WEEK-OLD CALVES.

Under separate cover I am sending some specimens taken from a calf. I am not able to give the history as I would like to, because I did not see calf until after it was dead.

As near as I can learn, this is the fourth calf this man has lost—all pure bred, in the last few weeks. They seem a little weak at birth, refuse to nurse, just lay with head to the side until death. Some seem to nurse normally at first but soon refuse. The bowels are normal at first, then become loose but only one has had marked diarrhea. All evacuations are of a very light color.

Postmortem examination showed no marked lesions. The bowels were very empty; a little gas; small intestines a triflle inflamed; a few hemorrhagic spots on heart, liver a little dark and solid. The spleen was quite hemorrhagic, kidneys normal, blood quite dark. These calves live from three days to one week. What are your findings and what treatment would you suggest?—C. & C., Indiana.

REPLY—Bacteriological examination of the specimens sent was impossible on account of the use of concentrated solution of formalin as a preservative.

Macroscopically, petechia and larger hemorrhages on the heart and liver were somewhat indicative of hemorrhagic septicemia. Is there any infectious abortion in this herd?

ECHINORHYNCUS GIGAS INFESTATION IN PIGS.

I am sending specimens from a pig.

History: Of thirty pigs, age about three months, the owner has lost eight in the last four weeks. There is one sick now.

Symptoms: Scouring, eat well. Have been fed on rye, oats and ground corn, with cows' milk.

Post mortem findings: Intestines normal. Heart, kidney and spleen normal. The liver appeared normal but contained about 100 worms like those enclosed with the specimens. No parasites were found in the intestines or stomach. One lobe of the lungs was congested, the other lobes were normal. What is your diagnosis?

These sick pigs are Poland China. The other breed Durocs, seem not to be affected.—W. L. S., Michigan.

REPLY—Bacteriological examination revealed no pathogenic organisms of any kind.

The worms in the liver were Echinorhynchus gigas.

FOXES DIE FROM UNKNOWN CAUSE.

I am forwarding you the stomach, lungs, heart, kidneys and the stomach contents of a black fox. This animal seemed normal on June 30, 1921, and was found dead next morning. The animal seemed to be very much bloated when found. This is the second animal to die this way. This means a loss of about $2,000.

Please let me know what you find on laboratory examination. Poisoning is suspected. —G. A. M., Wisconsin.

REPLY—Chemical analysis of the stomach's contents and other organs failed to reveal the presence of any poisons.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

The Importance of Parasites in Meat Inspection

Animal parasites, owing to their greater size, were known long before bacteria and were given early recognition in meat inspection. Ostertag's Handbook of Meat Inspection contains a number of interesting historical observations along this line. Thus, the regulations concerning butchers in the Augsburg charter in 1276 provides that "If a butcher kills a measly hog, he shall sell it to no one without a statement of this fact." "The city laws of Bamberg in 1306 forbade the sale of measly meat." "In Wurzburg in 1343 punishment is provided for 'all persons who offer for sale measly or mangy meat.'" A decision in 1346 provides that villagers shall bring their hogs to the monastery, where they shall be "inspected by viewing their tongues," presumably for Cysticercus cellulosae, as meat dealers on the European continent still use this method of examining living animals for this parasite. According to Ostertag, the animals are thrown on their side, the mouth opened with a stick and the tongue drawn out with a cloth and inspected and palpated for these bladderworms. The charter of Zwickau in 1348 provides that "No butcher shall offer for sale in the meat booths measly meat." In 1376, the butchers in Regensburg were punished for dealing in measly pork. In 1434, a man was imprisoned in Regensburg for attempting to sell hogs in which the bladderworms had been secretly punctured so that they would not be detected by inspectors. In 1437, it was provided in the Marbach region in Alsace that inspectors determine whether measly meat had been used in making sausage.

It is interesting to note that at a later date there was a period of pronounced laxity in meat inspection and that veterinarians, strange to say, were largely responsible for this. Ostertag says: "While in earlier times, up to the 18th century, in all civilized countries the meat of diseased animals, with the qualified exception of measly meat, in which tuberculous meat was also included, was considered as dangerous to human health, veterinary science began to demonstrate that much meat which had so long been held to be dangerous was in reality harmless. . . . Thus the veterinary teaching of the harmlessness of meat in cases of certain animal diseases very rapidly matured into a general belief that all meat of diseased animals is harmless."

It is also interesting to note that just as animal parasites had been largely responsible for the earlier meat inspection, so they were primarily responsible for its restoration after the period of neglect. According to Ostertag, "It was not until the year 1852 that Kuchemeister established the fact that hog cysticerci were the embryonic stages of Taenia solium of man, and that the trichina epidemics which, during the 60's of the previous century, appeared in Northern Germany to an alarming extent, again attracted public attention to the necessity of regulating meat inspection. . . . It is therefore probable that the connection which had been demonstrated by Kuchenmeister between the cysticerous of food animals and the tapeworms of man furnished the chief impetus to a reorganization of meat inspection in addition to the general feeling of its necessity. . . . The biological investigations concering muscle cysticerci and trichinae were the first building stones for the structure of scientific meat inspection."

In meat inspection at the present time, parasites have lost none of their former importance, and the control of parasites through meat inspection is possible to an extent that is not true of bacterial diseases. Meat inspection affords a most satisfactory opportunity to interrupt the life cycle of a number of parasites. The destruction of measly beef

and pork affords direct protection to man from two of the large human tapeworms and tends to make these tapeworms rarities in man where inspection of meat is generally practiced. The destruction of hydatid bladderworms affords direct protection to dogs from hydatid tapeworm and indirect protection to man and the domesticated animals from the larval hydatid. The "condemned" tank is an effective interruption to the life cycle of a number of other parasites, and the records of parasites present in dogs in the United States of recent years and at an earlier period show that such tapeworms as Taenia hydatigena (—T. macginata) are decreasing in prevalence, undoubtedly as a result of the extension of effective meat inspection in this country.

To judge the efficacy of present-day meat inspection as a factor in parasite control, one has only to recall the old-fashioned slaughterhouse of 25 years ago. At these houses the offal was disposed of in various ways, all of them bad. It was thrown into a nearby stream, thrown out in the field to be sorted over by dogs and other animals, or fed to swine. Into this offal went the more obviously diseased portions of carcasses and the unsaleable portions, thus ensuring a supply of bladderworms to grow to tapeworms in dogs, of trichinae to develop in the swine and of masses of worm eggs to wash over the adjacent fields. The old slaughterhouse was a malodorous place and a prolific source of blow flies and other flies.

The condemnation of meat is mostly on the ground that it is capable of transmitting disease, that it is unwholesome or that it is esthetically objectionable. Parasites fall largely into some one or more of these categories. Tapeworms and trichinae develop in man as the result of eating infested meat; heavily parasitized tissues may be degenerated or filled with fibrous tissue, and otherwise harmless worms, incapable of transmission to man and associated with only local pathological processes, are objectionable in meat and meat products since people as a rule have a very natural objection to eating worms, however harmless. In addition to the losses sustained by the live stock industry in terms of meat condemned for such causes as cysticercosis, there are considerable losses from parasitized livers, "knotty guts," or intestines unfit for sausage casings as a result of infestation with larval nodular worms, etc.

With the extension of adequate meat inspection to cover all meat produced in this country, the disappearance of certain parasites, especially certain cestodes, might be confidently expected. Such tapeworms as Taenia solium, T. saginata, T. hydatigena and Echinococcus could scarcely survive the general and persistent destruction of their larval forms in the domesticated animals used for food. While a deer may be infested with Cysticercus tenuicollis or Echinococcus and might be pulled down by dogs and these animals infested with the adult tapeworms, T. hydatigena or the adult Echinococcus granulosus, the amount of parasitic infestation maintained in this way must be very small as compared with that due to the close association of the dog with our food-producing animals in the restricted range of the farm and ranch. Ostertag testifies that wherever meat inspection has been introduced Taenia solium of man has become of rare occurrence, and the occurrence of Cysticercus cellulosae and hydatid in man has also become far more rare.

The question as to the best procedure to follow in protecting the public from trichinosis is one which has been answered in one way in this country and in another way in Germany. Germany has for many years depended on microscopic inspection of pork and pork products to protect her population from trichinosis. This practice is probably a natural development in connection with the common German practice of eating raw or only slightly cooked pork, sausage, ham and other similar products. In the United States microscopic inspection for trichinae has been carried out in the case of pork and pork products intended for shipment to Germany at one time in the past, but it has been held that microscopic inspection in general was inadvisable for several reasons. For one thing, the American people, as a rule, do not care for uncooked pork and its derivatives, though certain elements of our population, notably Germans and Italians, are more or less addicted to eating such meats. As a result, it has been thought advisable to educate the public as to the dangers arising from the use of such meats and avoid creating a feeling of security in such a practice. Microscopic inspection is expensive. In 1901 Stiles showed that such inspection for the entire

German empire would cost over $3,000,000 annually and noted that at that time the annual appropriation for the entire work of the United States Department of Agriculture was less than this sum. Furthermore, as Stiles clearly showed, microscopic inspection cannot be depended on to detect trichinae in all cases, and the feeling of security with reference to meat thus inspected is unwarranted. His critical summary of the reports of trichinosis in the German Empire for the years 1881 to 1898, inclusive, shows that of a total of 6,329 cases with 318 deaths, there were 3,388 cases (53 per cent) with 132 deaths (41 per cent) which were due to faults in the German meat inspection service. In 112 cases the meat had been inspected and passed as free from trichinae; in 13 cases the meat was condemned or known to be trichinous, but was nevertheless used; in other cases the meat was eaten before the results of the inspection were known, or should have been inspected but was not, or there was some other defect in the inspection. In a period twice as long as the one given here for Germany, the United States, without microscopic inspection for trichinae, had approximately 900 cases of trichinosis. These figures quite justify the policy of the United States government in the matter of inspection.

At the present time the American government depends on educational measures and the American habit of cooking pork thoroughly before eating it, to protect its people from trichinosis. In the case of such pork products as are habitually eaten raw or with little cooking, such as Italian hams, sausage, etc., the pork ingredients are not microscopically inspected, but are subject to such processing, by heat, cold or curing, as has been found satisfactory in killing any trichinae that may be present. The experimental work on which these regulations are based is mostly that of Ransom and his collaborators, who carried on investigations along this line in the Bureau of Animal Industry for several years. Ransom and Schwartz found that trichinae were quickly killed by a temperature of 55 degrees C., gradually attained, and on the basis of their experiments the Bureau of Animal Industry adopted a temperature of 137 degrees F. (58.33 degrees C.) as the minimum temperature to which pork and pork products must be heated in order to kill trichinae. For cooking pork in the home to kill any trichinae that may be present, the following rule is given:

Cook the meat 15 minutes in summer or 18 minutes in winter for each pound of meat if put into boiling water and the water kept boiling throughout the cooking process. The time should be lengthened at higher altitudes and where meat is taken direct from a refrigerator to be cooked. To destroy any trichinae that may be present in pork in summer sausage, mortadella, mettwurst, Westphalian style hams, Italian style hams, lachschinken, etc., the bureau provides on the basis of Ransom's experiments, that the meat be refrigerated at a temperature not higher than 5 degrees F. for not less than 20 days. Ransom, Schwartz and Raffensperger have found that certain curing processes can be depended on to kill trichinae, the effective factors being a combination of salt, temperature and drying.

WHIPWORM IN SWINE

Under separate cover, I am sending a small bottle containing several small worms which were taken from the large intestine of a spring pig found dead by the owner.

The postmortem findings were as follows: A marked general anemia of all mucous membranes, all organs apparently normal, all lymph glands apparently normal with the exception of the mediastinal, which were swollen and dark in color. The lungs contained a small amount of frothy mucous, a common thing to be observed.

These worms were found in great numbers, and while there were no other visible symptoms, I am inclined to believe that these worms were of greater consequence than might be suspected at first sight.

Kindly let me know if these worms were the cause of the death of this animal.—S. K., Illinois.

Reply: The worms which you collected from the large intestine of a pig and sent in for determination are specimens of the swine whipworm, Trichuris suis.

As a rule whipworms appear to do little damage, though there has recently been a prolonged discussion in the German medical periodicals as to the likelihood of their being responsible for a certain proportion of cases of appendicitis and low-grade typhlitis in man. Haase has reported cases where young pigs have been killed by massive infestations with

whipworms. The pigs were weak and emaciated. On postmortem examination they showed a marked typhlitis and dry cecal content. The buccal mucosa and the base of the tongue were swollen, highly inflamed and covered with a thin fibrinous coating. In the case you report, the lack of local lesions in the large intestine in connection with the worms renders it doubtful as to whether the worms could have been responsible for the death of the animal.

The life history of the whipworm needs further study. Fuelleborn has recently reported that in feeding embryo-containing eggs of the human whipworm, Trichuris trichiura, to guinea-pigs and rabbits, he found that the eggs hatched and the worms began their development in the cecum; apparently they developed there and did not enter the circulation and pass through the lungs as ascarids do.

At present no satisfactory treatment for the removal of the whipworms of swine is known. Prophylaxis is a matter of sanitation and cleanliness.

THE STATUS OF THE VETERINARY PROFESSION

The status of the veterinary practitioner is today a mixture of "Castrator," "Slaughterman" and "Blacksmith," as viewed by a great portion of the public; whilst governmental bodies, judging by the princely salaries they award to their employed veterinary surgeons evidently have not yet placed them on a par with the aforementioned fraternities. For a brief space of time I was employed as a government inspector and noted that the slaughterman who could not even speak English drew more pay than I did.

I am not a total pessimist in regard to our profession, but I do not deceive myself into believing I am regarded by the great mass of public opinion as a professional man, and I am fully aware our brother profession has not yet shown any desire to accept us on any terms.

Socially we have hardly started to make any impression. Those who deserve, eventually get **somewhere** in spite of the handicap of being a veterinary surgeon. Those who do not paint the whole profession with a very unenviable brush.

We may well be proud of the attainments of the past and present big men of our profession, but until we succeed in sifting out the undesirable raw material both from an intellectual and social standpoint as it presents itself with a view of getting a diploma (particularly the element who know all about colic before they enter a veterinary college), the undoubted advancement of veterinary science will not be recognized by the public and they will only pay for it on a basis of this estimation.

No professional man is able to command respect unless he behaves as a gentleman and lives on a social scale in keeping with his education and training, which to a degree requires money which usually has to be obtained from fees.

This leads up to a pointed subject, "Are we getting all that we are entitled to?" I do not consider that we are. As a basis for further argument amongst my 14,000 professional brothers I will suggest one reason which I consider is acting very detrimental to our interests.

Every success in discovering the causative agent of any disease and means of combatting same, reduces our income under the present method of dispensing it to the stockowner. The combined successful efforts of the laboratory and field veterinary surgeons are immediately pirated by almost every drug and biological firm in the business and retailed to the stockowner direct. In some cases this is done under terms which they will not even offer to practicing surgeons. Let us as an example take "symptomatic anthrax." A well known firm sells a prophylactic treatment direct to stockowners with 5 coupons to each box, informing the purchaser with 10 coupons he will be entitled to an injector free, but will not make this offer to veterinary surgeons.

It appears to me the time has arrived when our 14,000 members should immediately decide to make manufacturers of biological products state what policy they are going to adopt; namely sell to the laity or sell to the veterinary profession. We shall then be in a position to know who to patronize and avoid the smiling firms who are now running successfully with both hare and hounds to our financial detriment. "Ole Virginee."

INDIGESTION IN AN OSTRICH.

A case of traumatic indigestion in an ostrich, treated by Dr. J. W. Arnold of Riverside, Calif., on autopsy showed forty-two pennies, some comparatively new and bright, others corroded until very thin, and thirty-six other objects from a knife blade to stones as large as could be swallowed.

Queries and Answers

Edited by E. L. QUITMAN, D. V. S.

PRESCRIPTION FOR MYOSITIS IN MULES.

Please give me treatment for myositis in equines. H. C. G., Okla.

REPLY—For myositis in horses or mules, we recommend the following prescription:

℞

Acetanilidi pulv.
Bellad. fol. pulv.
Potas. nit. pulv. āā.....℥ij.
Sodii Salicylatis .....℥iv.
M. et. div. in pulv. No. viii.
Sig.—Give one powder every four hours.

MELANOSARCOMATA OR BOTRYOMYCOMATA IN A HORSE

On August 6th I was asked to treat a 1100-pound, nine-year-old, dum-colored gelding, that had been used on a rural mail route up until April, when tumors began to form on it and caused the owner to discontinue working it. In May he turned it out to pasture, hoping for a recovery to occur from rest and grass.

These tumors have slowly enlarged until the present time. They vary in shape; some being nearly round, and others oblong. They are from a half-inch to an inch in height. The round ones vary from an inch to three and one-half inches in diameter. The elongated from one inch to three inches in width and are from two to nine inches in length.

These tumors are located on the underside of the belly and thorax and on the outside of the hind legs from the hock to the croup. There is one tumor about one and one-fourth inches in width and six inches long on the tendo-Achilles, and one on one front leg, extending from two inches above the fetlock to two inches above the carpal joints. This latter is from one to one and one-half inches in thickness. There are about a dozen tumors on each leg and hip and about twenty underneath the body.

These tumors are quite hard and somewhat sensitive on palpation. They seem to include in both skin and subcutaneous tissue. The horse seems to be feeling well and shows no stiffness or lameness. The appetite, pulse, and respiration are normal, but horse may be slightly poor in flesh.

I did not incise any of the growths, but they do not resemble mellanotic tumors, as far as I can see. On palpation they do not fluctuate but appear quite hard or fibrous. Please diagnose and recommend treatment.—J. E. S., Ohio.

REPLY—Had you incised one of these tumors, it would have simplified the diagnosis. Under the circumstances, we can only say that we believe your patient is suffering from one of two conditions—either melanosarcomata or botryomycomata.

Incise one of these tumors to make sure whether it is melanotic. If melanotic, no treatment aside from surgery will be of any value. If they are not melanotic, we incline to the belief that it is a botryomyces infection and advise putting the patient on two-dram doses of potassium iodid, three times daily, administer the iodid one-half to one hour before feeding.

For more detailed information on the latter condition, see the article entitled Botryomycomata in a Mule on page 59 of the June issue of VETERINARY MEDICINE. We have recently received a letter from the doctor treating the mule referred to stating that it has made a perfect and complete recovery under the treatment recommended.

CONDITIONING CALVES FOR THE SHOW RING.

We have some boys' feeding clubs in this county, feeding calves. The club leader has asked me to furnish some kind of oil to make the calves' skin soft. One of the leaders had worked for some herdsman of Scotch shorthorns, and said he would buy some kind of oil called the Scotch-herdman that would do the work.

Is there anything sold on the market that I can get for him, or any drug, that might be used? I would like to find out about this.—W. O., Indiana.

REPLY—To soften calves' skins, I recommend "White Rose" neutral oil marketed by the Standard Oil Company.

It is a mineral oil and will not gum up the skin or hair. It will tend to make the skin soft and the coat glossy. It may be applied just as you get it. It should be rubbed in well.

URTICARIA IN COW

I have a peculiar case or condition in a cow which I wish to relate to you, hoping you may be able to give me some information.

About six weeks ago, I found this cow somewhat inconvenienced and evidencing some pain from one or two large tumifaction, one on the brisket, and one fairly high up and back of the shoulder. These swellings were fairly firm, somewhat tender and resembled purpura in the horse more than anything else. These that I found were not the first, the owner informed me that a week before she had a few smaller ones in other parts, but they had disappeared.

These tumifactions have appeared behind and before the shoulders, in the loin, in the hind leg resembling lymphangitis, over the croup and on the brisket, but there were no swellings below the knees or hocks.

This cow was giving milk and the flow at no time decreased materially. The appetite was but slightly impaired if at all. The temperature was but one degree above normal when I saw her. The pulse was rather slow but fairly full.

I started the cow off with a saline purgative and duiretics. Later on I found these disappearing only to be followed with others, I thought probably the blood or capillaries were at fault and I put her on iron and vegetable tonics.

With these tonics for ten days, the swellings all disappeared and for two weeks the cow seemed fine in every way.

The owner came in since I started this letter. He tells me the cow was fine last night but that this morning she has quite a large elongated wall of swelling along the distal end of the ribs, that she looks just a little full and emits an occasional grunt, as though she was uncomfortable, but still would eat if she were allowed.

She is one cow of a herd of fourteen cows and younger cattle, she is the only one that has shown any sign of sickness.—R. J. N., Canada.

Reply: The animal appears to be suffering from urticaria which oftentimes, in cattle and dogs, takes the peculiar form described by you.

In the treatment of this case, we advise repeated small doses of magnesium or sodium sulphate in conjunction with two to four ounce doses of bicarbonate of soda, to be given three times daily. One or two ounce doses three times daily of potassium or sodium bromid is also oftentimes of value in these cases.

The rapid appearance and quick disappearance of these swellings precludes the possibility of an infection and also their rapid change of location precludes the possibility of a migrating foreign body.

SERIOUS LOUSE INFESTATION IN CHICKS

A few days ago I was called to investigate the cause of the death of several spring chickens, and several more sick. In the entire flock there were about 300 springs ranging from February to chicks several weeks old. The trouble seems to be confined to the younger animals. The living picture of the unfortunate birds is that of a starved, rundown, drowned condition, feathers all ruffled up, weak and of a dirty appearance.

Autopsy revealed absolutely nothing aside from a general anemic condition of the internal organs and tissues. A careful search was made for worms; none were found in the two chicks that were autopsied. The surroundings are good, sufficient room for the entire flock, have free range in the shade.

I made careful inquiry into the system, kind and nature of feed given. Heberling's chicken tonic, egg mash, whole oats and some corn are the feeds given, aside from what was picked up while ranging at will about the farm.

Not being familiar with the ingredients of the two first mentioned feeds, I advised their withdrawal from the daily ration. The above feeds were being fed during the last month; previous to that time no deaths were recorded.

Kindly give me your opinion of the case. Thanks for your previous aids in my troubles.—S. K., Ill.

REPLY—The clinical picture which you give fits louse infestation very well as far as you give it. Did you make any search for external parasites?

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

Tetanus or Muscle Fatigue Toxemia*

On September 13, 1902, shortly after the termination of the Boer War, the 3rd Hussars, of which I was then in veterinary charge, started from Newcastle, Natal, to march with 200 remounts to Mooi River, a distance of roughly 140 miles. The remounts were all in very bad working condition, having evidently been fed on soft food and given no exercise for a considerable time, and there were several casualties en route from laminitis, exhaustion, etc.

On reaching Mooi River on September 19, it was reported to me that there were three cases of lockjaw amongst the horses. I was at first inclined to ridicule this report, but on examining the animals I found it to be apparently correct. There were two horses showing most of the usual signs of tetanus, viz., tonic spasm of all the facial muscles, the jaws being closed to within a quarter of an inch, whilst it was perfectly impossible to force them any further apart. There was also firm tetanic contraction of the levators of the upper lip and alae nasi, the retractor of the lower lip and orbicularis oris being in a like condition, giving a most strange appearance (risus sardonicus) to their countenance. In one case the membrana nictitans protruded partially over the eye-ball. In both there were clonic spasms of most of the other voluntary muscles of the body; the tails were rigid and twitching; the animals were trembling violently all over, and appeared scarcely able to balance themselves on their limbs.

The pupils appeared normal. The temperatures were 102° and 102.6° respectively; respirations in both cases shallow, and about 120 per minute. Pulse small and hard, and about the same in frequency as the respirations. On presenting water to them they made efforts to drink, which were entirely unsuccessful. The conjunctivae were deeply congested.

The third horse showed similar symptoms, including trismus; but, in addition, he was down, unable to rise, and in a state that could not be described otherwise than that of violent convulsions, and being apparently quite in extremis I had him destroyed at once.

The other two—despite protests from some officers of the regiment—I decided to leave till the morning, but was unable to adopt any treatment (for which, possibly, they were all the better!).

The history was the same in all three cases. The horse had started in the morning apparently well, but had been showing signs of considerable fatigue on the two previous marches, and on this day they had only with extreme difficulty been got into camp, their riders being compelled to dismount, off-saddle, and drag them along the last few miles. As soon as they had stood still for a short time these remarkable symptoms commenced.

I regarded it as a most extraordinary and unparalleled occurrence that there should suddenly be three cases of tetanus simultaneously occurring at the same moment and all in precisely the same stage of the disease, but it was nothing to my astonishment when on visiting the two survivors the following morning—some ten hours later—I found both patients feeding eagerly and exhibiting every sign of perfect health! They trotted off freely, and appeared as bright and cheerful as any horse one could wish to see, all trace of the urgent symptoms shown the previous night having completely vanished.

The horses did no further marching, but were left at Mooi River and remained perfectly well, passing out of my hands some three days later. Moral—never be over hasty or over certain in your diagnosis, nor yet place too much reliance on the value of your treatment, which in these cases consisted solely of rest and fresh air, assisted by that propitious and ever-present agency, "Vis medicatrix naturae."

Concerning the possible pathology of these cases, it is evident that they had no connec-

*Read before the Central Counties Veterinary Medical Society, February 1, 1912.

tion with true tetanus. The symptoms shown must have been due either to strychnin poisoning or to some other unknown and unrecorded vegetable poison peculiar to Natal, or else, as is more likely, they resulted from long-continued and gradual fatigue in horses in an unfit condition. Their pace never exceeded a trot, and about nine-tenths of the march was done at a walk.

Now, in most cases of extreme over-fatigue, the animal is probably travelling at a considerable pace, and blood-deoxygenation and impending heart-failure compel the animal to stop before a state of absolute muscular exhaustion is arrived at. In the horses under discussion the pace was insufficient to produce either "auto-asphyxia" or cardiac syncope, and the voluntary muscles, for which periodical rest and recuperation are necessary, were thus forced to work on until their very last grain of energy was expended.

Physiologists have shown that precisely the same changes take place in muscles during muscular contraction as occur after death (only in a more extensive degree) in rigor mortis.

Starling states: "In rigor mortis chemical changes take place; muscle which was previously alkaline becomes acid, the acidity being due to the formation of an excess of sarcolactic acid. At the same time there is a production of carbon dioxide and an evolution of heat."

Again, when speaking of muscular contraction (or muscular energy) during life, he states: "When a muscle contracts there is an increased formation of carbon dioxide and sarcolactic acid, and an increased consumption of oxygen."

It is thus apparent that if muscular exertion be gradually carried to an excessive or extreme degree, chemical changes will take place in the muscular system, which in no way differ from those occurring in the rigid and tetanized condition known as rigor mortis. This is further supported by the fact that when animals are hunted and killed after a prolonged pursuit, rigor mortis sets in instantaneously, it being well known that foxes or hares killed under these circumstances have been found perfectly stiff and rigid, and capable of being propped up erect on their legs the very instant after death has taken place. It therefore seems probable that extreme muscular exhaustion, or "muscle-fatigue toxaemia," accentuated no doubt by unfit condition, is accountable for the curious phenomena observed in these cases, though the remarkable coincidence that three horses should have been attacked in identically the same manner and on the same day is quite beyond the bounds of explanation. I have never heard of any cases of this nature having been previously described, which is my excuse for publishing these notes.—By Veterinary-Captain C. H. H. Jolliffe in The Veterinary News.

FORAGE POISONING IN TURKEYS

This is a disease of turkeys known as blackhead, enterohepatitis, etc Being a breeder of pure-bred White Holland turkeys for the last 14 years, perhaps I am in a position to give the profession a few points in regard to this disease, that have not been touched upon heretofore.

In 1911, the year I finished school, I had 60 young turkeys, and lost all but 10 or 12. I began to make a study of this disease, knowing the loss it would cause this county, (six to ten car loads of turkeys are shipped from this section every year). I first tried to find the cause, then the treatment.

Predisposing Cause: Several days of wet weather, followed by several days of hot dry weather. During the wet weather the grass becomes sappy. When followed by several days of hot, dry weather, the seed head becomes mouldy. If you will watch turkeys feeding when on the range, you will find they strip the seed head from the grass stalk. They will start out on the range in the morning, perfectly well, and come back at night sick. I have never seen a case of so-called blackhead during a dry season or in the winter time.

Cause: Mould or fungus poison.

Symptoms: The bird refuses to eat, becomes dull and very thirsty, feathers become ruffled, wings and tail droop, head usually becomes purple, discharge from the bowels, a greenish yellow color.

Post-mortem findings: Enlarged liver, intestines discolored and covered with petechia.

Treatment: When an outbreak occurs in the flock, put the whole bunch, sick and well, in a well ventilated, roomy shed or house, give each bird one tablespoonful of castor oil and allow no food or water for 12 or 18 hours. Then mix up a saturated solution of potassium permanganate, put one tablespoonful in each pint of drinking water, and allow them to drink all they want. Feed soft dough of corn

meal and wheat bran mixed, on clean boards, feeding boards to be removed after each feeding, and to be kept perfectly clean. Do not turn turkeys out of house until entirely recovered, it usually requires a week or ten days for them to recover.

Report on the above treatment: I have personally lost only a few turkeys since I have been following the above line of treatment. I have had it in my flock every year except one, and that was a dry season.

Mrs. S. came to my office and said she had lost 30 turkeys out of a flock of 60 and that the other 30 were sick. Upon examination I found so-called blackhead, the above treatment was prescribed, and no further loss occurred.

Mr. B. had a flock of 50 head, lost two or three, and the remainder were sick. I prescribed the same treatment, with the loss of only one.

I could give numerous reports like these.

A few things to remember:

Give the treatment before bird is too far gone.

Keep the turkeys confined until they are entirely recovered.

Allow all the potassium permanganate solution they will drink, making up a fresh solution each day.

Feed on clean boards.

T. PAUL PERRY, D. V. S.

Tazewell, Virginia.

COMMENT—While it appears that the condition described by Doctor Perry is a fungus poisoning, or at least a toxic condition presumably due to toxic substances in the diet, the evidence afforded is not entirely convincing as to the identity of the condition observed by him with the condition properly known as blackhead. In true blackhead the most striking alterations are in the ceca and the liver. One or both of the ceca become enlarged and inflamed, the mucous lining disappears wholly or in part and a hard core forms in the lumen. The liver becomes enlarged and necrotic areas of varying size, shape and depth, usually grey or yellow in color, form. Recovery is infrequent. The fact that Doctor Perry does not mention the condition of the ceca or note a hepatic negrosis suggests that the condition he observed is not what is commonly termed blackhead, and the large number of recoveries under the treatment he prescribes is in accord with this supposition.

PREVENTING ROOTING IN BREEDING HOGS AND IN FEEDING

In a recent number of VETERINARY MEDICINE I read an article on the anti-rooting operation described by Kinsley that recalled to me an experience of my own. I had a client that raised about one hundred pigs a year for his own feeding and grazing. They were pastured on seeded meadow and blue grass. It was my task to keep them from tearing up the blue grass. It was most difficult for the first four years. I used all the appliances known up to that time (1911).

The breeding stock were the worst rooters and no matter how they were fed, they continued to root. The feeders could usually be handled with one good set of rings. I was ready to give up when watching a hog in the act of rooting, I conceived the idea of cutting the tendons that retracted the cartilage. There are two sets of tendons, one set to extend the cartilage and one set to retract it. The retractors are the ones to cut.

Operate just after the pigs are weaned, or at any time later. The operation can be performed just as easily and effectually on old hogs as on pigs, but if it is postponed until they develop the habit of rooting, they persist in it, or in the effort to root no matter what the appliance.

I tried different systems and instruments until I devised one myself by taking a safety razor blade and grinding it down to a blade one-fourth inch wide with a cutting edge on both sides. I made a handle out of wood, cutting a groove in the end to permit the insertion of the blade allowing the end to protrude one-fourth of an inch. The blade was fastened with a wedge. The handle was made square at the end and one-half inch thick, thus making a stop that prevents deep cutting.

Have an assistant sit down and take the pig in the lap and hold both front legs. Catch the nose by putting the thumb on the top of the nose in the center just back of the cartilage, and the first finger under the upper lip; stretch out the nose, and the tendons can be felt readily. They both have the insertion almost together in the center at the top. When operating on small pigs, I cut both tendons at once by using a blade three-eighths of an inch wide and being careful to place the blade on the center. In older animals I use the small blade and make two cuts, leaving a little skin between. Apply Iodin, turn them loose and no further attention is needed.

In new plowed or seeded ground hogs that have been operated upon in this way can root. In a good stiff sod they can not.

Ringing if done properly with the right kind of rings is the best preventive of all for rooting. A ring should be made so that the flat end has a cone-shaped hole or loop in it and the opposite end should be made sharp to insert in the nose, pass through the loop and clinch tight. The puncture from a ring of this kind will heal in a few days. Such rings may be cut out with a good pair of nippers without leaving unsightly scars.

C. A. MATTHEWS.

Utahville, Pa.

TUBERCULOSIS CAUSES HEAVY LOSS TO POULTRY KEEPERS.

Tuberculosis of fowls is more widely distributed over the United States than is generally supposed. It is especially destructive to flocks in the North and West. The course of the disease is slow, symptoms are apparent only in the late stages, and the mortality is high. The danger to man, however, is slight, especially since cooking the flesh of fowls destroys the tubercle bacilli.

Found Widespread in Some States.

Of all domesticated birds the fowl shows by far the highest mortality from tuberculosis. The disease has spread so extensively in some States as to cause very serious losses to the poultry industry. The insidious manner of attack makes it most difficult to combat, because the affected birds show no visible symptoms until the disease processes are far advanced, and in the meantime it has been communicated to others of the flock.

Avian tuberculosis is caused by a microorganism closely resembling the bacilli of human and bovine tuberculosis. While, primarily, it affects birds, it may also attack other animals. Pigs exposed to tuberculous flocks frequently are affected, and display localized tubercles in the lymph glands of the head, neck and mesentery. Rats and mice also may contract the disease naturally. Bacilli of the avian type have been found in tuberculous persons. The principal danger to humans is in eating raw eggs from tuberculous fowls, as eggs may be infected with the bacilli, however, as man is considered quite resistant to the avian type of tubercle bacilli, the chances of infection are doubtless slight.

Most eggs harboring the organism fail to hatch, thereby reducing to a minimum the danger of infection from this source.

Although birds may become infected at any age, the disease is not readily detected by ordinary observation in those under 1 year old, because months are required for the bacilli to multiply in the system sufficiently to interfere with the normal functioning of the body. The older fowls, from 2 to 3 years old, are most likely to display symptoms and show a high death rate.

The U. S. Department of Agriculture has recently issued a bulletin (Farmers' bulletin No. 1200) on this subject, which may be had free upon application to the Division of Publications, U. S. Department of Agriculture, Washington, D. C.

LARGE ABSCESS IN VAGINAL WALL DUE TO FOALING

A short time ago I was called up by a farmer who stated that he had a mare that was constipated and wanted to know how much salts to give her. I advised him to give some linseed oil. That same evening I was called up again, the owner asking me to go and and give the mare an injection.

I found a mare weighing about 1,000 pounds that had foaled a little over four weeks previously and had just been bred again that day for the second time. The mare was eating and appeared all right with the exception that every few minutes she would stop and strain as if to defecate.

I made inquiry as to whether the horse had made proper entry, and the owner assured me that he had.

I then made examination of rectum and after passing my hand in about ten inches I found the passage closed off completely from what appeared to be pressure from the vagina.

Upon examination of the vagina the pressure appeared to be in the rectum. Further examination showed that the obstruction must be in the upper wall of the vagina.

The enlargement was about twelve inches long and about 8 inches deep and 8 inches across.

I decided that it was an abscess in the superior wall of the vagina, due no doubt to an injury from foaling and to which the opening had closed.

As I could find no trace of any abrasion in the lining I made an opening in the posterior inferior part of the abscess and allowed about three quarts of pus to escape into the vaginal

passage and then to drain out. The cavity was washed out with a cold antiseptic solution, using the ordinary injection pump with the long rubber hose.

This washing being continued by the owner for about two weeks, and the mare recovered. —W. J. Moon.

INFECTIOUS ABORTION OF COWS.

We should be glad if the problem of infectious abortion in the cow were as easy of solution as is the disease in the mare. The disease in the cow is chronic, while that in the mare is acute. The germ causing the disease in the cow is difficult of isolation and culture, while the germ causing the disease in the mare is comparatively easy of isolation and culture. When we speak of the germ causing the disease in the cow we mean B. abortus isolated by Bang and Stribolt of Denmark in 1897. This particular germ has been found and believed to be the causative factor in this disease in the cow by investigators in America as well as in European countries.

In 1918, however, Smith of the Rockefeller Institute, found an organism associated with abortion of cows which he named Vibrio fetus. Whether this germ will play much of a role as an etiological factor in this disease remains to be seen. The germ discovered by Bang of Denmark has been so universally found associated with the disease that it is the generally accepted etiological factor. Some investigators, however, doubt its being the main cause of the disease in cows.

Our results up to date in producing immunity by injection of a live culture, give us some encouragement.

Some investigators are of the opinion that almost every herd of cattle harbors the infection. My observation leads me to believe this is the case. We believe the disease can be controlled to quite an extent by strict sanitary measures. In addition to immunization, therefore, we recommend the following sanitary measures. Each cow that shows signs of aborting should be isolated until she aborts or delivers a normal calf. If she aborts, the fetus and afterbirth should be destroyed by burning or burying deeply. All straw and litter soiled, should be burned or scattered on a field where no live stock runs. The aborting cow will continue to soil bedding as long as she has any discharge and this bedding should be properly destroyed. After the cow ceases discharging, her hind quarters and legs should be cleansed and washed with a disinfectant. A two percent solution of Cresol is good for this purpose. The stable should then be thoroughly cleansed and sprayed with a dilution of one of the coal tar dips using one part of dip to twenty parts of water.

It is now well known that the abortus (Bang), is harbored in the udders of many cows affected with abortion and the germ given off in the milk. It is thought by some that healthy cows may be infected by the milker's hands through the milk of an infected cow coming in contact with the milk duct of a healthy cow. As a precautionary measure the milker should wash his hands with soap and water after milking an infected cow and rinse them in running water which has been boiled.

There is a wide difference of opinion as to the role the bull plays in transmitting the disease. These opinions vary, but it is well to irritate the sheath of a bull with a three-fourths to one percent solution of Cresol after serving a cow which as aborted

E. S. GOOD,
Lexington, Ky. Agr. Exp. Sta.

STRICTURE OF THE ESOPHAGUS IN A COW.

I was called to see a cow, aged 3 years.

Previous History.—The cow had never showed symptoms of any disease, but during the last five days she ejects the food some minutes after having eaten it; every now and then she shows tympanitis. Appetite good.

Symptoms.—The ground in front of the cow is wet. Auscultation of the gullet shows an abnormal sound. After having swallowed some food nothing is observed for a few minutes, then the cow arches the back, voids some urine, and ejects the food. The ejected food is quite moist. During ejection she does not show an anxious expression. During five minutes she refuses food, but after that time the normal appetite reappears. The gait is staggering.

Diagnosis.—Dilatation or stricture of the esophagus.

Prognosis.—Unfavorable.

Treatment.—Destruction.

Post-mortem.—In the thoracic portion of the esophagus a dilatation of the size of two fists was to be seen. The bulging was in the wall of the esophagus; the mucous membrane and the outside wall were intact. On palpating in-

side the esophagus, stricture was found. The bulging contained pus.—J. Bouwan Oosterholt, in The Veterinary News.

CHRONIC INDURATIVE NEPHRITIS IN A DOG.

I was called to a male draught dog. (The writer is a Hollander.—Ed.)

Previous History.—The owner was in possession of the dog since August, 1914, and since that time he noticed that the quantity of urine was increased, the appetite was less than normal; thirst increased. After about half an hour of draught work the dog was tired. Vomiting not observed.

Symptoms.—The dog was emaciated. Pulse normal, not hard and strong. The urine had the appearance of water. Reaction acid. Examination of the urine showed that it contained much albumin (Koch's test +, Heller's test +, acetic acid ferro-cyanid of potash test —, salicylsulphonic acid test +), no grape sugar (fermentation test—) was detected.

Diagnosis.—The large amount of urine indicates chronic indurative nephritis or diabetes mellitus, the appetite being less than normal diabetes may be excluded. The albumin indicates nephritis, so I made the diagnosis: Chronic indurative nephritis. I point out that without urine examination a correct diagnosis could not be made.

Prognosis.—Unfavorable.

Treatment.—Destruction.

Post-mortem.—Diagnosis was correct. The two kidneys were very much indurated, so that destruction of the tissue with the finger was impossible. Color, pale.—J. Bouwman Oosterholt, in The Veterinary News.

ADRENALIN SOMETIMES A SPECIFIC IN PURPURA.

Army practice has furnished much useful information of a clinical nature as regards purpura. The occurrence of mild cases is not uncommon; these display slight swellings, but well-marked petechiae are present, and the cases seem to recover with good nursing, and the much-abused potassium chlorate, given twice daily. The subcutaneous injection of solution of adrenalin chlorid, ℥ii, daily seems to exert marvellous effects in some serious cases, while in others it fails. Neither swellings nor sloughing of the skin follows its use. In suitable weather the advantages of open-air treatment cannot be too highly spoken of.

One point is worthy of consideration, viz., in a long series of cases of strangles, influenza, pleuro-pneumonia, etc., we may not meet with a single case of purpura. But should one case of the disease turn up, more are pretty certain to follow. What does this indicate?—E. W. Hoare, F. R. C. V. S., in The Veterinary News.

SUDDEN PARALYSIS AND PROMPT RECOVERY.

I was called late one evening in the early spring to see a ten-year-old light-draft mare in good working condition, suffering from what was diagnosed as spasmodic colic. The pains were sharp and intermittent, alternating with periods of what seemed to be perfect ease.

An aloetic ball was given, one ounce of sulphuric ether and two ounces of chlorocamph anodyne. The animal seemed to yield nicely to the treatment, the periods of uneasiness becoming shortened, with lengthening periods of ease.

I left the patient at this time, with instructions that one-half ounce of the anodyne be given every hour as long as any pain lasted. The animal was reported to be all right the next morning.

Late the following evening, I received a hurry-up call to this farm, with the information that the same patient was in a very bad condition.

Upon arrival I found the mare down in the driveway of the barn, unable to move a muscle. The owner gave me the following history: While the other horses were being fed that evening, she was standing in the driveway begging for her feed. In a few minutes she was noticed down and making a desperate but unsuccessful effort to get up. After struggling for some thirty minutes and working her way out into the lot, she became quiet and seemed to be unconscious. She was placed upon a sled and dragged back into the driveway, and a good bedding of straw supplied.

At this time the temperature, pulse and respiration were found to be normal, with no sensibility of any part of the body except the head.

A diagnosis of paralysis was given, although it was really a question in my mind just what condition really existed. When the head was raised, the animal could swallow water seemingly without any trouble.

Several compressed tablets containing sixty grains of powdered nux vomica were left the owner, with instructions to give one every

hour, dissolved in an ounce or two of water.

He was asked to call me the following morning, which he did, reporting the animal to be begging for her breakfast apparently in the best of health.

He said only one or two doses of the medicine were given until she began to brighten up and have some muscular movements. She improved very rapidly from that time on.

Two months later this mare gave birth to a nice horse colt, and is doing farm work every day. And, I am still wondering what the trouble was. J. C. KIMBROUGH, D. V. M.

Rocky Comfort, Mo.

A SECOND ATTACK OF TETANUS.

I am tempted to record this case as I have never before heard of a horse having a second attack of tetanus.

The subject is a black well-bred hunter gelding, nine years old.

I was called to see him on December 31; he had been hunted three days before. He was showing well marked symptoms of tetanus; the muscles as hard as a board, especially those of the neck; the jaws could be opened about an inch.

He was put into slings, and got a daily injection of tetanin for seven days; during this time he showed no improvement, in fact, the third and fourth day he went back, refusing all nourishment, which consisted of milk and sloppy bran, with crushed oats.

On the eighth day there was a slight improvement, which was maintained, and on January 17 he was taken out of slings for a few minutes, and walked round the box. This was increased daily, and on the 24th he was sent to exercise. He made an uninterrupted recovery, being afterwards hunted to the end of the season, when he was sold to another client of mine in the neighborhood.

I could find no wound to account for the entrance of the microbe, and he had not been lame.

About two years later, I was again called to see him. The history was that until a week previously he had been treated by the blacksmith for a festered corn; he was hunted on Jan. 3, and was noticed to be not in his usual form. On the 5th he was hacked about six miles and arrived home very stiff, and in a white lather, was given a colic draught, and left for the night.

Again, the symptoms were unmistakable, but luckily the jaws were not quite closed, and he was able to suck nourishment. He was put into slings, and again injected with tetanin for seven days. This time I noticed no improvement until the 16th, when the jaws were distinctly more relaxed. He was taken out of slings on the 24th, for a little movement, which has been daily increased. I saw him being exercised to-day, when he moved as freely as usual, and was full of life.

In each case the horse was under ideal conditions in a roomy loose box, with darkened windows, and an attendant sleeping in the stable for the first two weeks; but although a high couraged animal the slings did not seem to irritate him in the least, and he rested in them well.

SNORING IN COWS.

One is apt to assume from reading the accounts of cases of this condition recorded in the veterinary periodicals that it is always due to post-pharyngeal abscess. It is undoubtedly true in many instances, and I have frequently met with them, that snoring is caused by these abscesses, but on the other hand one quite often fails, on exploring the pharynx of a snorer, to find anything abnormal. The late Mr. Cunningham, of Slateford, and others have described their method of operating, which is very simple—a gag, a hooked knife to rupture the sac, and a "cure." Last autumn I was sent for to a cow that had been making a noise for a considerable time and was now going back in condition, giving much less milk than formerly, and was not feeding well. I made a careful examination of the pharynx, and found nothing to account for the trouble. Externally the larynx was abnormally prominent, as if pushed down by some growth. A rather distressing cough aggravated the patient's condition. As something had to be done I advised the insertion of a tracheotomy tube, and the owner consenting, I immediately put in a Field's tube, and the cow soon began to mend, she fed well, put on flesh, and her milk came back. I lost sight of the cow, but about three months after then I received a message that she had been sold to the butcher, and that I could get my tube and the cow's "throat" if I sent for them.

I accordingly despatched a messenger, and received the larynx and a portion of the trachea with the tracheotomy tube still in position.

The larynx was evidently affected with tuberculosis. Its mucous membrane was replaced by a sort of granulation tissue, having numer-

ous caseating patches and pus, and debris from it partly filled the cavity of the organ. The vocal cords had disappeared. The most extraordinary feature was furnished by the arytenoid cartilages. They were simply enormous. Their anterior borders, greatly thickened, stood out prominently, dull white in color, and firm to the touch. They were affected with amyloid degeneration, and gave the usual reaction to iodin.

Attached to each side of the larynx externally was a tuberculous lymphatic gland the size of a pigeon's egg.—A. N. Foster, F. R. C. V. S., in The Veterinary News.

INCOMPLETE DELIVERY OF A COW.

I received a message from a farmer that he had a cow calving before her time, that the water bag had bursted four days before, and was hanging down behind, and he thought the calf must have been dead about a week.

I went prepared for a smelly operation. Some of the afterbirth was hanging from the vulva, and on inserting my hand into the vagina, I found lying there a four months fetus enclosed in the membranes. The os was almost closed, and I could scarcely insert one finger. The cow was a three-year-old shorthorn in good condition, and I cannot account for the non-delivery.—Ernest Morgan.

ADRENALIN FOR QUICK RELIEF OF ASTHMA IN DOGS.

I noticed the Query and Answer in the August issue of VETERINARY MEDICINE, under the title of "Asthma in the Dog." I would advise the use of adrenalin chlorid hyperdermatically. You will find the results equally as interesting as the parturient paresis treatment phenomena.

A few moments after the injection of adrenalin the short breathed and struggling animal will be restored to normal breathing and apparently as well as ever. Repeat on recurrent attacks.

Dosage three to fifteen minums, depending on weight of animal, and increasing slightly for continued use to conform with manifested relief. The human complains of coldness throughout the body and chills after injection, but only of a few moments' duration.

This is the best relief than can be obtained and has quite a lasting effect. Daily laxatives for bowels and evacuation of the stomach is beneficial during the attack.

While the wonderful effects of adrenalin in asthma of the dog can be quickly noted, it would take the suffering asthmatic human to express the wonderful and quick relief obtained from same. W. T. Hufnall, V. M. D., Waco, Texas.

ABSENCE OF ONE OR BOTH TESTICLES.

Such cases, or course, are rare, but an operator who has had many cases of "rig" horses was bound to meet them on occasions I have had practical experience of such in three cases. One was the case of a valuable racehorse. The animal was a true anorchid, the ends of each cord terminating close under the loins in a small bulb of fat. The facts of this case were verified on post-mortem examination by Prof. McFadyean.

In another instance, a monorchid cart colt, the right testicle weighed 12½ ounces, and was quite twice the normal size, whilst on the left side the cord terminated imperceptibly into the peritoneum, there being no sign of any testicle or epididymuis.—F. T. Hobday, in The Veterinary Record.

OPERATION FOR BLINDNESS IN SWINE

I was called to see a show sow that had the eyes closed by the excessive amount of tissue in and above the eyelids, she could not see at all. I operated on this sow as follows:

Restrained her by stretching and fastening the front and the hind legs to posts; the patient lying on its side. Chloroform and ether, equal parts, was administered by inhalations until the sow was completely anesthetized. The eye lids were cleaned with soap and water and an eliptical section of each lid was removed in the form of a watermelon slice, one inch long and five-eighths of an inch wide. The edges of the wound were sutured together with cat gut; the ropes removed, the animal was allowed to come out of the anesthesia.

After she had walked around thirty minutes she was able to open eyes only about half way. The ropes were replaced and chloroform and ether administered a second time; the skin over the orbital crest was cleaned and a section of skin two inches long, one inch wide, of same shape as before, was removed. The edges sutured together with cat gut—the ropes removed.

When the animal came from under the influence of the second anesthetic both eyes were wide open. This sow made a complete and permanent recovery.

The hair was not shaved from field of operation as the sow was to be entered in the state fair in a few days. We got healing by first intention and an expert judge could not detect any signs of surgery afterwards.

I believe if one will remove enough of the skin above the crest he will accomplish same results: V. O. CUDD, D. V. M.

Monmouth, Illinois.

ABNORMALITIES OF THE TESTICLE FOUND IN THE ABDOMEN.

Here curiosities were often met with, for the testicle might be as small as a filbert or as large as a Rugby football; it might be as hard as a bullet or as soft as a balloon, and its interior might contain almost anything—hair of various colors (generally black or brown), bone, perfectly or irregularly shaped molar or incisor teeth, cystic fluid, the Strongylus armatus, or tumor tissue. I have met with all these, and in a specimen obtained recently the one testicle contained everything enumerated except hair. The tumor tissue might be fibroma or embryonic, or it might be sarcoma, whilst one specimen, which the curator of the museum of the Royal College of Surgeons Dr. Shattuck, F. R. C. S.) gave me to understand was unique in either man or animal, contained a lipoma. F. Hobday, F. R. C. V. S., in The Veterinary Record.

EXTENSIVE RUPTURE OF THE STOMACH IN A FOAL.

The subject was a cart foal between six and seven months old, which had been running out at the grass until two days before the illness, when she was brought in owing to bad weather.

The animal was first noticed to be dull and off her feed in the morning, and the owner, suspecting a chill, sent for me early in the afternoon.

The symptoms then presented were:—The animal stood with her head hanging down and was disinclined to move, the temperature was 101.7° F., and the pulse did not seem to denote anything very serious; the respirations seemed normal, except that they were very shallow; there was no pain, no sweating, nor any sign of ingesta coming from the nostrils, neither was there any sign of vomition.

The treatment consisted in the administration of speritus etheris nitrosi with quinin and some linseed oil.

The owner noticed the animal sweating slightly, and occasionally looking round to her sides during the course of the evening, and about three o'clock in the morning she died suddenly.

Post-mortem examination. On cutting into the abdomen a quantity of gas escaped from the peritoneal cavity, and on the incision being enlarged, a large quantity of ingesta was seen covering the bowels. This was removed, the amount being estimated at four gallons. The stomach was found to be ruptured along its greater curvature to the extent of quite fourteen inches, and was almost empty.

The case seems worthy of recording owing to the obscure cause, the absence of any symptoms which would lead one to suspect stomach trouble, the extensive rupture, and the enormous amount of ingesta found in the peritoneal cavity.—D. C. Greene, M. R. C. V. S., in The Veterinary Record.

RECURRENT PARTURIENT PARESIS ENDS FATALLY

A short time ago I was called to the country to see a cow that the owner stated was down and could not get up.

I found a cow which had just calved the day previous and was suffering from what appeared to be a clear case of milk fever. I used the air treatment and gave strychnin hypodermically and the cow was up in about three hours and appeared bright and could walk around all right.

The following evening I was called up again, the owner stating that the cow was the same as before, and for me to come as soon as possible. Upon arrival I found the animal about the same as before and gave the same treatment as I did at first.

I went away and told the owner that I would come out again in the morning and take a look at the animal.

I found the cow walking around the yard the next morning and after giving her a pound of salts I returned home.

That same day at about 2 p. m., I was called up again to come, as the animal was down again, but before I arrived she was dead.

My idea in reporting this case is to find

out if others have had cases like this, and what their results have been.—W. J. Moon.

DEATH OF A SHIRE MARE FROM PNEUMONIA FOLLOWING A NECROTIC WOUND IN THE HEEL.

A Shire mare aged seven years was observed to go suddenly lame in the off hind limb on January 16th. This lameness appeared to wear off, and the mare was used next day for a short journey. On the following morning (January 18th) she was found standing on three legs. I was called in the next day, when I found the animal cast, with her head under the manger. After getting her up and placing her in slings I discovered a necrotic wound in the heel and of the skin of the outside quarter of the coronary band, which was breaking down and giving issue to a putrid material.

I thoroughly cleansed the affected parts with an antiseptic solution, and syringed out the pockets with hydrogen peroxid, and after drying the wound I painted it with a tincture of iodin. When I examined the mare on the following day I found symptoms of lung lesions, and came to the conclusion that the case would end fatally, notwithstanding the fact that there was neither elevation of temperature nor injection of the mucous membranes, nor any quickened breathing. During the greater part of the day there was no appetite, but towards the evening she did eat a little food, and drank a good quantity of water.

From this time until the evening of January 27th, when she died, she now and again took a little food, but seemed at times to be indifferent to her surroundings, hanging in the slings and showing no inclination to put any weight on the limbs. On the 24th a fetid breath was noticed. This seemed to increase as death approached, but until the last twenty-four hours there was no acceleration of the respiration. The peculiar features of this case were the normal temperature and mucous membrane; also, although there were evidences of pronounced lung lesions, there was no respiratory acceleration until the last twenty-four hours. The course of the disease agrees with some of those cases described under the heading of "Bacillary Necrosis of the Horse," in "Hoare's Veterinary Medicine," Vol. I.

Whether the cause of the lesion in the heel and coronet was due to an injury, or to frost bite, I cannot say, as I did not see the case until the parts were in an advanced state of necrosis.—A. P. Burgon, M. R. C. V. S., in The Veterinary News.

COCCIDIOSIS IN THE HORSE.

Subject.—A hunter-bred four-year-old was reported in the early part of April, 1914, to be "doing badly"; teeth and worms were suggested by the owner as the cause. However, on examination teeth were eliminated from the problem, and I decided to treat for worms combined with tonics. This line of treatment with variations was carried on for a month. The colt in the meantime had lost flesh rapidly, and had occasionally purged badly. On May 16th I decided to test for tuberculosis, but got a negative reaction. On May 30th I applied the mallein test with a negative result also. As the colt had now got very emaciated, and looked the picture of misery, the owner consented to have him slaughtered.

The post-mortem examination revealed the mucous membrane of the small intestines thickened, and somewhat of the appearance of what one gets in Johne's disease of cattle. The mesenteric glands were enlarged and congested, all other organs being healthy. — S. E. Sampson, M. R. C. V. S., in The Veterinary News.

INVERSION OF THE VAGINA IN COWS.

Though ordinarily this is regarded as a simple accident, and one presenting few varieties and complications, I attended within a month three cases which exhibited widely different lesions.

Case I.—The owner, a small mountain farmer, called on me to seek advice with regard to a pregnant heifer, which he said was "showing the reed."

I spent 20 minutes of very scarce time in giving him instructions in the vernacular, "What to do,"—i. e., to keep her in the byre on a clean bed, place a few sods under her hind feet so as to raise the quarters, and wash the protrusion carefully and return it to its proper position—repeating the procedure if necessary.

On the following day (Sunday), I received a message to attend the animal and found that all my instructions had been studiously ignored. The heifer was lying in filth with a gradient of about 1 in 4 from the manger. The prolapsed vagina lay on a heap of feces.

the mucos surface was eroded and had a leathery appearance. I washed the organ with a warm antiseptic solution, replaced it, and sutured the vulva. The case progressed favorably, and the owner removed the sutures in about fourteen days.

This I regard as an ordinary simple case of prolapse of the vagina.

Case II.—A three-year-old Welsh cow was due to calve in a few days. She was found on the pasture with the vagina protruding, and was brought into the byre by the owner, who then consulted one or two "knowledgeable men" with regard to the case. Finally, I was sent for. On arrival I found the byre full of "curiosity seekers," commonly seen in the neighborhood of crofters, who congregate to give vent to their individual pedantic opinions, and then wait to "hear what the doctor says."

The patient was recumbent and could not be persuaded to rise. She showed more distress than is usual in such cases. I made a few inquiries, and one of the "neighbors" said that the "water bag" had appeared, and that he had opened it.

I examined the os uteri and found it closed, and no membranes were protruding. I then asked the "knowing one" if he was sure that it was the water-bag which he opened, but he was positive on the point, and assured me there was no doubt whatever, that he had vast experience, etc., etc. On being cross-examined he admitted that the water-bag was much tougher than any he had seen, and "had to use his knife and then push the thing back." As the cow had not urinated, I passed the catheter, but with no result. I then washed the inverted vagina, replaced it and sutured the vulva. Having called the owner to one side, I explained to him that I strongly suspected the bladder had been inverted, and that his neighbor had, in error, put his knife therein. On the next day symptoms of peritonitis developed, and the animal died that night.

I made a post-mortem, and found, as I expected, an opening in the wall of the bladder, caused by the "obliging neighbor's" knife.

Case III.—An aged, pregnant Welsh cow, which had suffered from prolapse of the vagina four years previously, and at the time I advised the owner to part with her.

On this occasion the cow strained very severely, the protrusion was of unusual size, and felt like a huge football. I administered two ounces of chloral hydrate in a quart of water, and bathed the prolapsed vagina with a warm antiseptic solution. It was, however, found impossible to replace the prolapsed organ, and I came to the conclusion that the size and density of the protrusion were due to the inclusion of a distended bladder. With a fine trocar and cannula I punctured the protrusion, and urine flowed out, with the result that the distension collapsed, and the organs were replaced without difficulty. Sutures were then placed in the vulva, and were removed in 10 days. A few weeks later the cow calved normally.—By L. W. Wynn-Lloyd, M. R. C. V. S., in The Veterinary News.

LACTATION IN OPEN HEIFERS

I am attending a herd of Holstein cows where a goodly percentage of the two and three year old heifers are twenty to twenty-seven pound producers, with enviable yearly records. In this herd some of the heifers, seemingly, are so anxious to become "stars" that they begin the lactation period before they are even in calf.

The case just now attracting my attention is one in a heifer twenty-two months old. She was bred Jan. 27th, returned Mar. 28th, Apr. 26th and July 17th. On July 18th the mammary glands were functioning to an extent that it was deemed advisable to strip part of the contents from the udder. This was done, but the milk not weighed. She gradually increased in milk flow for ten days when she was giving fourteen to sixteen pounds of perfectly good milk per day. An examination of this heifer July 30th gave no evidence of her being in calf.

Another twenty-four months old heifer in same herd that was four months in calf developed purulent mammitis in one quarter. On stripping this quarter a semi-purulent gelatinous material was at first obtained. This semi-purulent secretion gradually became more of a milk nature and the other three quarters came into activity. In about ten days this heifer was giving several pounds of good milk a day. Owing to her being in calf we are drying her up as fast as we can, which is proving to be quite a difficult thing to do.

The first heifer mentioned is gradually increasing in milk flow and to day (Aug. 9th) she gave 17½ pounds of good milk. We expected to continue milking this heifer just to learn what might develop from milking a heifer that has never been pregnant. The

query arises whether any permanent harm can result as a sequel to this abnormal lactation.

This heifer's dam is a 31-pound cow and she has a 27-pound junior three-year-old sister, which makes her too valuable to trifle with if there is danger of doing her any injury by continuing to milk her in this prenormal lactation period. Neither of these heifers has ever been sucked by other young cattle.

If some brother practitioner has had some actual experience in similar cases we would appreciate an expression of facts either through the Journal or by letter direct.

L. A. Maze.

Pontiac, Michigan.

ACUTE PARENCHYMATOUS MAMMITIS OF CATTLE.

This disease in many instances is one of the most troublesome affections veterinarians are called upon to treat, frequently resulting in undesirable sequelae.

Its treatment by fomentations and the application of medicaments to the affected site, with or without friction, have not in my hands proved a great success, and in several instances cases have run a prolonged course, resulting in great economic loss being sustained by the owner and the value of the animal permanently reduced.

I have now discarded that treatment in favor of the application of thermofuge or antiphlogistine to the affected site, and in suitable cases employing the hyperemic treatment of Bier in addition. The cases so treated, characterized by a condition of hyperthemia, loss of appetite, and a tense, hot and painful quarter or udder, with a flaky condition of the milk, have responded to the treatment within three to five days, resulting in the animal giving a normal flow of milk, normal both as regards quantity and quality.

The procedure is to cut out one or two thicknesses of cotton wool sufficiently large to surround the udder in which holes are made to allow the teats to hang through. A strong piece of muslin is fashioned in the same manner, and enough tapes attached to keep the sling so made in position when applied.

The antiphlogistine or thermofuge is heated until it attains the desired warmth, when it is thickly smeared on the affected quarter or quarters, the cotton wool is then applied, and the sling placed in position. This is left on for twenty-four hours or longer; if considered necessary another smearing may be given.

In cattle which have pendulous udders I have found it possible to adopt Bier's hyperemic treatment by placing at the base of the udder a broad adjustable elastic garter, after the style of the top part of a sock suspender, of such a tightness that will retard the flow of the venous blood from the udder but not interfere with the arterial circulation thereto. This bandage is allowed to remain on for six hours, when it should be removed, left off for an equal period, and re-applied by the attendant for a shorter interval of time.

RUPTURE OF UTERUS IN A COW—A WARNING.

Some weeks ago I was called to a five-year-old cow which was said to have been off her feed for some days and constipated. The owner had administered certain potions, including the ubiquitous red drench. She was due to calve in a week's time.

The temperature was subnormal, the pulse weak. There was extreme dullness and enlargement of the abdomen. The patient emitted a low moan every few seconds.

On proceeding to examine the uterus, I found the os fully dilated, and a little further, on the left side towards the floor of the womb, a rupture large enough to admit a calf's head. I passed my hand through and felt the bowels and bladder. The fetal membranes were already ruptured, and the calf had apparently been dead some days.

I explained the condition to the owner, and assured him, with no little confidence, that the cow would die. We decided to deliver the calf, and as there was very little contraction in the ruptured uterus, we experienced some difficulty. And I went my way.

A week later an old professional friend spent an evening with me, and I mentioned the case to him. "Take care you don't get a rude shock," he said, "I had a similar case last year, and prognosticated as you did, but the cow recovered. There was this difference, that in my case the rupture was in the roof, and in yours towards the floor of the uterus." This made me curious to know the fate of my cow, which was a good many miles away.

A few days ago I met my client. He is fortunately, brimful of human nature. He wore a roguish smile and whispered "would you advise me to fatten that cow or keep her for breeding again? She never looked back."—L. W. Wynn-Lloyd, in The Veterinary News.

FORAGE POISONING IN HORSE SUSPECTED.

The subject was a fine bay mare, 8 years old, weighing 1400 pounds. When I was first called the following symptoms were observed: Sweating, animal very thin; pulse, 70; temperature, 102° F.; very unsteady on hind legs; urine black; feces thin; peristalsis active, and the animal showing colicky pains. I administered salicylic acid and creolin and left sulphocarbolates and nux vomica with orders to restrict the amount of water until the diarrhea was checked.

The mare got over the colic and feces became normal, but the urine was still colored. I then gave calomel and carlsbad salts with the object of clearing up the intestinal catarrh and jaundice, and also continued the sulphocarbolates with a tonic mixture of iron, arsenic and strychnin.

I could not get any flesh on the patient, although she was bright, ate good, and passages from the bowels and kidneys became normal. The pulse and temperature were normal or nearly so most of the time. This condition lasted about three weeks or more. The mare got down twice and was raised easily. Later I put her on sodium cacodylate. The patient died and a postmortem examination revealed the following: Inflammation of portions of the intestines with severe catarrh; the spleen was enlarged to three times the normal size; the liver was pale gray in color, soft and increased to five times its normal size; the left lung was congested (probably from decubitus); contents of bowels were very light in color, due to lack of bile secretion.

I have had several such cases. Some would be so bad when first seen that it would seem they would die within a day, but would make quick recoveries. Have lost two cases, however.

I would appreciate the opinion of other men, on the diagnosis and the treatment, through your journal. F. C. CLARK,
Perry, N. Y.

More Variety in the College Clinics is Desirable.

PRACTICAL FORMULAE.*

Sun Cholera Mixture for Diarrhea.

℞
Spiritus camphorae.
Tincture opii.
Tincture rhei.
Tincture capsici.
Spiritus menthae piperitae.....āā ℥ss
M.
Sig. Two tablespoonsful for horses and cattle. ♏xx to ℥i for dogs, in plenty of water.

Ointment for Ringworm, Pruritus, Eczema, Lichen, Etc.

℞
Thymol .....gr.xv
Alcohol .....℥iiss
Glycerin .....℥v
Aq. ad. .....Oi
M.

Laxative Ball for Horses.

℞
Pulveris aloes .....℥iv
Pulveris zingiberis.
Pulveris nucis vomicae.....āā ℥ii
Glycerin q. s.
M. et fiat bolus in No. 1.
Sig. Give at once

For Diarrhea in Foals and Calves.

℞
Olei ricini .....℥iii
Tincture oppi .....℥i
Olei menthae piperitae.....♏v
M.
Sig. Give at once in a pint of warm cooked flour gruel.

*From Winslow's Veterinary Materia Medica.

DISEASES OF THE DOG.

(Continued from page 34.)

fright or shock. One such case was a choreic West Highland—very gun shy—being terribly frightened by having a gun shot just over her. She rushed away for a couple of hundred yards chased by a lot of spaniels and terriers in a panic. When caught and soothed it was at once noticed that the chorea had ceased entirely. I have heard of similar cases, but I have never tried the remedy personally.

I think the most hopeful cases are those in which the twitching ceases during sleep and where it is confined to one place, and the nearer this place is to an extremity the better. This twitching in the toe is much more hopeful than twitching in the neck, shoulder or jaw.

To the ordinary practitioner a post-mortem examination on a choreic dog reveals very little that is illuminating. I have never been able to see with the naked eye any changes in the brain or chord that would account for the disease. I should very much like to know if any members have ever seen chorea in the cat, and if so under what conditions?

Coma

The last sequel of nervous disorders I shall mention is coma. This is only too frequently the percursor of death, but not always so. I think we are all agreed that it is a sign that the higher centres are involved in some morbid process. I had a case some ten years ago of a dog in a state of semi-coma for three weeks make a complete recovery, though I was never able to thoroughly satisfy myself as to the cause. The dog is alive now, and apparently healthy and strong, though he was ill quite ten years ago.

Probably the commonest causes of coma are distemper and nephritis. Rest, quiet and darkness, and careful feeding are called for in treatment, but of course all depends on one's diagnosis as to the cause. A word of warning I must give as to handling such dogs. I was trying to get a semi-comatose dog to swallow once. As an experiment I gave a few drops of water first to see if deglutition were possible. No effort was made, and I opened the mouth and moved the tongue. The jaws slowly closed on my thumb, which I found I could not remove before it was firmly held. The jaws continued to slowly close until the teeth went through the nail, and I had a horrid place to remind me to be more wary in future. The jaws had to be forced apart before I was once more free.

There is little or nothing for me to say about encephalitis or any disease of the higher centres. We all get cases at some time or other, either as a result of disease, tumor or injury. The one constant sign is impairment of intelligence and the alteration in character. Treatment is on general principles, with plenty of "wait and see." I think such cases are better destroyed, as a dog can never be the same again when once it has undergone any severe disease or accident affecting the limited amount of intelligence it originally possessed. I do not like to say too much on this subject, as I can only expose my very great ignorance on all things connected with the brains of both cat and dog.

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTERESTS OF GRADUATE VETERINARIANS

TO the majority of the readers of this page it is unnecessary to mention that we have devoted ten months' time to talking SALES POLICIES. They KNOW that we are not selling to every practitioner who happens to have a license, but only to about half the number of licensed men—the Graduates.

These policy talks have made us many friends —more than we had expected in such a brief period of time—but during the meantime an important part of our work has been mailing our catalogs to graduate veterinarians.

Little has been said regarding our products, and it is *little* indeed when there is so *much* to be said.

The H-G Graduate Harmonies, our bi-monthly publication, has informed you regarding our advancement in the veterinary field, so that we have been with you during the past ten months, regularly — not waiting for the so-called normal conditions to return.

Harvest time, chautauquas and county fairs have interfered with the practitioner's plans no doubt, but now his fall work is right at hand. Most of the country banks offer encouragement for the betterment of conditions and it is up to all of us to make the best of it.

There is plenty of work to be done. Veterinarians who have been engaged in general practice, where all lines of activity invited their attention, have been on the job regularly. Now is the time to educate the client that veterinary service in the care of ALL of his stock is profitable to all concerned.

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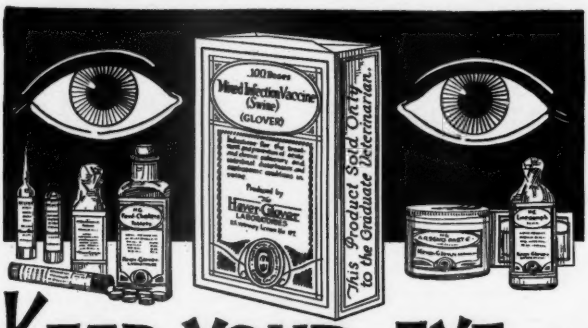

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Matters of Current Interest

Dr. R. R. Laughlin, formerly of Chardon, Ohio, has recently moved to Chagrin Falls, Ohio, where he will take charge of six herds of purebred Holstein and Guernsey cattle, all belonging to millionaires.

Dr. C. C. Brown, assistant to Dr. Geo. R. White, state veterinarian of Tennessee, contracted anthrax while holding an autopsy on an animal that had died of the disease near Brownsville, Tenn. The serum treatment was administered to Dr. Brown and he has fully recovered.

Reports from Nashville state that the third case of human anthrax developed on August 19th, when Dr. E. H. Queener, a veterinarian of Marysville, Tenn., became infected as a result of holding a post-mortem examination on cattle dead from anthrax. He is also receiving the serum treatment. Dr. White reports that the outbreak in cattle is well under control.

Dr. Charles S. McCoy, a graduate of the New York State Veterinary College, at Cornell University, class of 1921, has leased the hospital and taken charge of the practice of Dr. Frank J. Baker of Watertown, N. Y.

Dr. Fred Loehrke, a recent graduate of the Indiana Veterinary College, has purchased the practice of Dr. J. E. Leslie of Winamac, Ind.

Dr. Gilva Victor Woolsoncroft, a graduate of the Chicago Veterinary College, class of 1910, died recently at his home in Cissna Park, Ill. Dr. Woolsoncroft has been practicing at Cissna Park for the past ten years. He was thirty-six years of age, and a bachelor. His death was due to strangulation.

The eloquence of your words shames one for negligence in so important a matter as this. None of us can afford to do without VETERINARY MEDICINE, even though we have to do a spell of dieting to loosen our hold on the four bucks. The dieting might do us good; the journal is bound to.—E. L. H., D. V. M., Ill.

Dr. Arthur L. Hoaglund, Ottumwa, Iowa, died September 6th as a result of a fall in the Elks' Club Rooms in Ottumwa.

Dr. Hoaglund was thirty-three years old, and is survived by a widow, his mother, one sister and several brothers.

Dr. Walter G. Hollingsworth, well known practitioner of Utica, N. Y., was offered the deanship of the New York State Veterinary College at New York University, to succeed the late Dr. W. Horace Hoskins. He declined the offer.

An investigation of a recent outbreak of anthrax in Tennessee, conducted by Dr. Geo. R. White, lead to the conclusion that the disease was imported into Tennessee with cotton seed hulls from the infected districts of Mississippi.

Drs. J. W. Roberts and A. J. Ronsse are erecting an up-to-date one-story brick veterinary hospital, in Dracock, Calif.

The saying that "some attain greatness, some are born great and some have greatness thrust upon them" might have added to it, and some are the recipients of newspaper puffs, as for example the following from the Hagerstown, Md., News of August 27th: "Dr. H. J. Cosens, 236 Winter St., continues to be a money-saver to the many farmers throughout the country through his expert services in treating hog cholera. Dr. Cosens was the recipient of a medicine recipe from his father, who concocted it and who used it for a long time. No anti-toxins are used. Dr. Cosens has treated sixty hogs in the Williamsport-Sharpsburg districts since the last of April without any losses. He's growing popular with hog raisers."

Dr. Glenn R. Browne, Hoopeston, Ill., a practitioner of veterinary medicine and a breeder of purebred hogs, won first prize in the junior class, first prize in the senior class and the grand championship in all classes with a sixteen-month-old boar at the Illinois-Indiana Fair at Danville.

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KANSAS CITY KANSAS

Dr. C. H. Colton has located for practice in Boise, Idaho.

Dr. A. J. Bailey of San Antonio, Texas, was shot and seriously wounded recently. A former client shot Dr. Bailey following a dispute concerning a bill.

Dr. R. B. Parker, of Whitewater, Wis., has just completed the erection of a veterinary hospital. Dr. Parker's operating room has all the modern appliances.

Dr. Chas. R. Donham, a graduate of the veterinary department of the Iowa State College at Ames, and recently employed by the National Stock Yards Company at East St. Louis, Ill., has located for practice at Mexico, Mo.

Dr. H. R. Schwarze, formerly Associate Professor of the Animal Pathology Division, University of Illinois, has resigned his position with the university and moved to East St. Louis, Illinois, to take up work with the United Serum Company as manager of its branch, the Universal Serum Company.

Dr. W. T. Spencer, for the past two years state veterinarian of Nebraska, has resigned his position to accept the position of veterinarian for the Omaha Live Stock Exchange. Dr. Spencer's work will be chiefly with the farmers in Nebraska and will be designed to facilitate the progress of tuberculosis eradication.

Dr. Allen E. Morrow of Liberty, Mo., was recently found dead in the basement of his home. Death was due to a fracture of the skull, believed to have been the result of a fall. Dr. Morrow graduated from the Kansas City Veterinary College in 1913, and immediately located at Liberty. He is survived by a widow and one son.

Dr. W. A. Downs, a well known veterinarian of Cordele, Georgia, died September 4th, of rabies. Dr. Downs was bitten more than one month previous to his death, by a dog that he was treating. He is said to have immediately taken the pasteur treatment and to have finished the treatment before any symptoms of rabies developed. He lived less than 24 hours after the first paroxyms appeared.

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The Stephenson County (Illinois) Farm Bureau has employed a veterinarian on full time. His attention will be given largely to tuberculin testing of cattle belonging to members of the farm bureau.

An outbreak of hemorrhagic septicemia in northern Wisconsin recently resulted in considerable newspaper publicity for some veterinarians in and about Chippewa Falls.

Dr. J. L. Stemen of Washington, Iowa, has sold his practice to Dr. H. Phillips, who will take charge immediately.

Dr. J. F. DeCamp of Mt. Vernon, Iowa, has sold his practice to Dr. John Bryant. Dr. DeCamp will go west.

Dr. F. C. Yabsley, formerly of Hinsman, Ill., has taken over the practice of the late Dr. G. V. Woolsoncroft of Cissna Park, Ill.

Dr. F. J. Bolender of Woodland, Calif., has purchased a veterinary hospital in Selma, from Dr. A. D. Monro. Dr. Monro will engage in practice at Petaluma, Calif.

A fine healthy baby girl, the first child, arrived recently at the home of Dr. and Mrs. C. M. Stamps, Buffalo, Texas.

Dr. Fred R. Whipple, city commissioner of foods of Peoria, Ill., who has been on an extended honeymoon, has written the mayor of Peoria from Los Angeles that he will not return to Peoria, but will engage in small animal practice in Los Angeles.

Dr. R. W. Story of Princeton, Ill., died recently while undergoing an operation for appendicitis. Dr. Story was sixty-four years old. He graduated from the Ontario Veterinary College in 1887 and has been practicing in Princeton since that time. He was a former president of the Illinois State Veterinary Medical Association, and is survived by a widow and six brothers, who live in Canada. Interment was at his old home in Ontario.

Dr. W. J. Bardol of Buffalo, N. Y., died recently. Dr. Bardol was a graduate of the Ontario Veterinary College and was forty-seven years of age.

Animal Dentistry and Diseases of the Mouth

By Louis A. Merillat, V. S.

The comprehensive scope of animal dentistry necessitates an understanding of the teeth in their normal state at the different periods of life. This information, which includes nomenclature, evolution and retrogression of the teeth, function of the teeth, the age of animals as determined by the teeth, and dental diagnosis are thoroughly discussed in this work before the subject of dental diseases and treatment is touched upon.

Scope of the Work

The cutting and floating of enamel points.
The removal of projections which prevent perfect apposition of the dental arcades.
The treatment of secondary nasal catarrh resulting from diseased teeth.
The extraction of all diseased teeth.
The removal of tumors related to the teeth.
The treatment of stomatitis caused by the bit or by dental projections.
The amelioration of driving defects resulting from dental irregularities.
The treatment of faulty eruptions of the permanent or the temporary dentures.
Improving the appearance of the incisors of the horse.

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Bulletins of Interest to Veterinarians

So-Called Medicinal Hog-Cholera Remedies and Cures.

Bulletin No. 223, Purdue Univ., Agric. Exp. Sta., LaFayette, Ind.

This bulletin was reviewed at length in these pages at the time of its publication, but because of the great use veterinarians may make of the information it contains in localities where venders of worm powders, tonics for hogs and of fake cures and preventatives of hog cholera, etc., are operating, attention is again called to it. Every veterinarian doing any hog practice should possess a copy of this bulletin.

Essentials of Animal Breeding.

Farmers Bulletin No. 1167, U. S. Dept. of Agric., Washington, D. C.

This bulletin is written in simple language for the man who breeds farm animals, who wants to learn the rudiments of the science of breeding, and how to apply them in practice. It sets forth some of the known facts regarding the operation of the forces of heredity. Controversial subjects are avoided so far as possible.

The reader who cares to go deeper into the study of genetics is referred to textbooks on the subject, and particularly to Department Bulletin No. 905, "Principles of Livestock Breeding," by Sewall Wright. It is published by the U. S. Department of Agriculture, and is obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents.

A Bacteriological Study of Abscess of the Feet of Hens.

By B. F. Kaupp, North Carolina Exp. Sta., Raleigh, N. C.

It is observed that in flocks of heavy laying hens, especially in those of more delicate breeds as the leghorns, abscesses of the soles of the feet occur, more frequently in the late summer and fall. It is recognized that fowl are very resistent to the ordinary pus-producing organisms, even peritoneal injections of staphylococci taken from abscesses of other animals usually failing to infect chickens.

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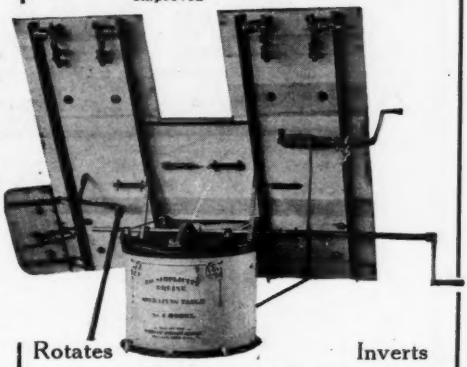

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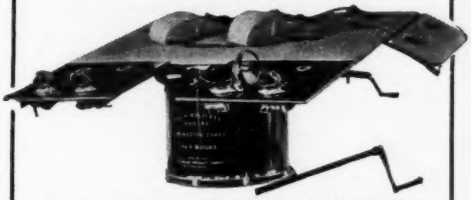

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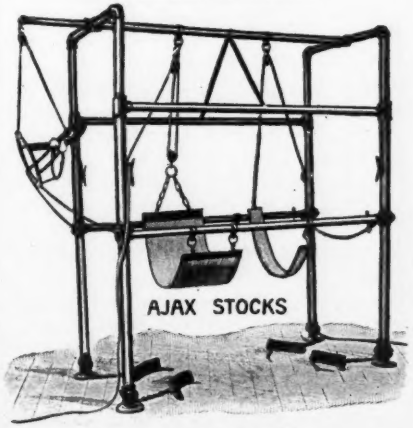

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Diseases of Sheep.

Farmers Bulletin No. 1155, U. S. Dept. of Agric., Washington, D. C.

Infectious and non-infectious diseases and common ailments of sheep in America are considered in this bulletin. It does not deal with diseases caused by animal parasites, such as gid, grub in the head, stomach, lung, and intestinal-worm affections, liver rot, scabbies, etc., or with plant poisoning. These diseases are described in other publications of the Department of Agriculture. The aim has been to give only the more important or characteristic symptoms which would be of value in distinguishing one disease from another.

Sheep owners are reminded that a disease does not always display identical symptoms in each animal, and also that certain general symptoms may be present in a number of diseases. Hence in important cases it is advisable to call in a veterinarian, if one is available, rather than trust too much to one's own powers of observation.

Methods of treatment are outlined with regard to ease of application and the use of remedies which are both effective and easily procured.

The infectious diseases considered are anthrax, black leg, malignant edema, hemorrhagic septicemia, tetanus, lip and leg ulceration, foot rot, white scour, joint ill, caseous lymphadenitis, tuberculosis, rabies, foot-and-mouth disease, sheep pox and actinomycosis. Following this a considerable number of non-infectious diseases are discussed.

The bulletin contains a number of illustrations, but unfortunately they are poorly reproduced.

Soft-Pork Studies.

Bulletins Nos. 157-160, Univ. of Fla., Agric. Exp. Sta., Gainesville, Fla.

The results of the experiments recorded in these bulletins will be of interest to all hog raisers of the southern states. It gives evidence that the soft-pork problem may not be so difficult to solve as many have considered it.

From the experiments it is evident that the melting point of fat is radically influenced by the character of the feed. The data also indicates that there is a large variation in the melting point of fat regardless of the food consumed. In other words, that heredity has

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January, 1922

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The faculty of the College will give assistance in every way.

The course will comprise two weeks beginning Jan. 16, 1922. It will be as practical, as up-to-date and as intensive as it is possible to make it. The cost will be moderate.

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an important influence upon the melting point of fat.

Taking of samples of fat from the live animals did not interfere with their making good gains in weight during the progress of the experiment.

Field Investigations of Forage Poisoning in Cattle and Horses.

Bulletin No. 210, Univ. of Ill., Agric. Exp. Sta., Urbana, Ill.

The result of these investigations seem to indicate that most cattle are not so susceptible to forage poisoning as horses and mules, and that contaminated corn silage and possibly other animal feeds which are unsafe or fatal to horses may be fed with less danger to cattle. Evidence from many outbreaks leads to the suggestion that some cattle may be more susceptible than others.

The Crow in Its Relation to Agriculture.

Farmers Bulletin No. 1102, U. S. Dept. of Agric., Washington, D. C.

The importance of the crow as a carrier of disease from animals on one farm to those on another is perhaps the phase of its activities that interests veterinarians most. From the investigations reported in this bulletin it would seem that the crow is not important as a carrier of animal diseases. In other words, the good and the harm that a crow does seems rather equally balanced, with perhaps a slight preponderance of the former. Much of the good that the crow does can ill be spared and the danger it inflicts may be materially remedied by proper measures against such birds as prove to be a nuisance.

Tuberculosis of Fowls.

Farmers Bulletin No. 1200, U. S. Dept. of Agric., Washington, D. C.

Tuberculosis in fowls is widely distributed over the United States. It is especially destructive of fowls in the North and West. The course of the disease is slow. Symptoms are observable only in the later stages and the mortality is high.

The characteristic lesions of tuberculosis are found in the internal organs of the affected fowl and are easily recognized. Treatment of affected birds is useless, but the disease may be stamped out by methods given in this bulletin.

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Feeding Laying Hens.

Circular No. 101, Purdue Univ. Agric. Exp. Sta., LaFayette, Ind.

The increasing importance of the farm poultry flock in the practice of veterinarians makes it advisable that they be informed in the feeding and care of these animals, as well as in the hygiene and pathology. After a rather comprehensive discussion of the subject, the author gives 18 rules for feeding.

Growing Beef on the Farm.

Farmers Bulletin No. 1073, U. S. Dept. of Agric., Washington, D. C.

Some of the most essential items in growing beef on the farm are:

(1) Plenty of pasture and feed.

(2) The right kind of cows—those that will produce good calves regularly.

(3) A good, pure-bred registered bull—one that will sire good calves persistently.

(4) A large calf crop. This means that all cows shall drop calves, and that the calves shall be properly cared for at birth.

(5) Proper care of the breeding herd and the calves.

(6) Selection of good heifer calves to replace old or inferior cows.

(7) Prevention of disease among the breeding herd and the younger stock.

(8) Shelter sufficient to protect the cattle from both severe cold and extremely hot weather.

(9) A practical knowledge of fattening cattle for market.

(10) Marketing to advantage.

The Food Value of Milk.

Bulletin No. 215, Conn. Agric. Exp. Sta., New Haven, Conn.

Milk is absolutely essential for the life of infants and very young children. It is a most desirable adjunct to the diet of older, rapidly growing children. It is the main dietary reliance in cases of disordered digestion or extreme illness.

Milk contains an abundance of protein, fat, carbohydrate and mineral nutrients, and its proteins are not only of superior value when used alone but they are especially adapted to supplement the protein deficiencies of the cereals which form so large a part of the daily ration of mankind. Its mineral nutrients also supplement the deficiencies of the cereals, meat, sugar fats in these important elements. Moreover, it contains the three vitamines

ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn.	Auburn, Ala.	March, 1922	C. A. Cary, Auburn, Ala.
American Vet. Med. Assn.	Denver, Colo.	Sept. 5-9, 1921	N. S. Mayo, Ravenswood, Chicago.
California State V. M. A.	Los Angeles, Cal.	June, 1922	J. P. Bushong, Los Angeles.
Central Neb. Vet. Assn.	Kearney, Neb.	Sept., 1921	L. B. Wolcott, Shelton, Neb.
Central N. Y. Vet. Med. Assn	Syracuse, N. Y.	Nov., 1921	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Conestoga Vet. Club	Lancaster, Pa.	2nd Thursday each month	H. B. Brady
Georgia State Vet. Assn.	Macon, Ga.	Betw. Sept. 8-15, 1921	P. F. Bahnsen, Americus, Ga.
Illinois S. V. M. Assn.	Chicago	Dec., 1-2, 1921	D. M. Campbell, Chicago, Ill.
Indiana V. M. Assn.	Indianapolis	January, 1922	E. T. Davis, Plainfield, Ind.
Iowa Vet. Assn.	Ames and DesMoines	January, 1922	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Ottawa, Kans.	January, 1922	I. J. Pierson, Lawrence, Kans.
Massachusetts V. A.	Boston, Mass.	4th Wednesday of month	H. W. Pierce, West Medford, Mass.
Minnesota S. V. M. A.	St. Paul	January, 1922	C. P. Fitch, University Farm, St. Paul
Mississippi S. V. M. Assn.	Canton, Miss.	January, 1922	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City	February, 1922	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn.	Billings	July, 1922	H. Marsh, Helena
Natl. Assn. of B. A. I.	Meet with A V.M.A	Sept. 5-9, 1922	S. J. Walkley, Milwaukee, Wis.
Nebr. Vet. Med. Assn.	Lincoln, Nebr.	Dec. 13 and 14, 1921	Carl J. Norden, Lincoln. Nebr.
New York S. V. M. Soc.	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn.	Fargo	July, 1922	R. S. Amadon, Agri. Coll., N. Dak.
Ohio St. Vet. Med. Assn.	Columbus, Ohio	January, 1922	R. I. Bernath, Wauseon, Ohio
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	January, 1922	R. M. Staley, Philadelphia, Pa.
Philadelphia Vet. Club	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Madera, Calif.	Oct. 5, 1921	H. B. Winteringham, Fresno, Calif.
Southern Cal. V. M. Assn.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern Mich. V. M. A.	Detroit, Mich.	2nd Wednesday, January, April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.	Salt Lake City	October, each year	E. A. Bundy, Ogden
U. S. Live Stock San. Assn.	Chicago, Ill.	Nov. 29, 30, Dec. 1, 1921	T. A. Burnett, Columbus, Ohio
Vet. Assn. of Alberta	Calgary, Alta.	September, 1921	T. E. LeClaire, E. Calgary.
V. M. Assn. of N. Y. City	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond	January 13-14, 1922	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn.	Madison, Wis.	January, 1922	O. E. Eliason, Madison
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June,	E. S. Bausticker, York, Pa.

MEAT INSPECTION

By Dr. Robert Ostertag

Translation by Earley Vernon Wilcox, A. M., Ph. D., Veterinary Editor Experiment Station Record.

This work is so well known to veterinarians the world over as being the basis on which all scientific meat inspection is planned and carried out, that any description of it for American veterinarians is superfluous

The work is splendidly illustrated with half tones, drawings and colored plates. The sections showing illustrations of and giving the description and life history of animal parasites are of particular value to veterinary practitioners, as are also the accurate description of post mortem lesions. Owing to a fortunate purchase of the entire stock of this work, we have been able to reduce the price twenty percent from what was formerly charged, even though the cost of book manufacture has increased enormously. Printed today that work could not sell for less than $10.

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The Work of the Division of Veterinary Science.

University of California Agric. Exp. Sta., Berkeley, Calif.

This report was discussed at some length when first issued, as a part of the biennial report of the College of Agriculture and Agricultural Experiment Station. Now that it has been reprinted as a separate pamphlet, veterinarians should surely procure a copy and retain it.

Prevention of Goitre and Hairlessness of New-born Domestic Animals.

Bulletin No. 117, Washington Agric. Exp. Sta., Pullman, Wash.

This is the most interesting popular discussion of the conditions named in the title which occur to a less extent in localities other than the Northwest. It is of interest to veterinarians everywhere.

Investigations of the Hair of Different Breeds of Cattle.

By Josef Camek, a reprint from the Journal of Agricultural Science, Vol. X, Part 1.

The maximum length of hair in pure-bred animals is found between the ages of six months and two years. The hair of bulls is longer than that of cows. In a given animal white hairs are shorter than colored ones and more uniform in size. No relation was found to exist between the feed and the length of the hair. Young cattle have the thinnest hair. The white hair of a given animal is thinner than the colored hair. The relation of thickness of hair to length are not always the same. The ash content of hair is not consistent.

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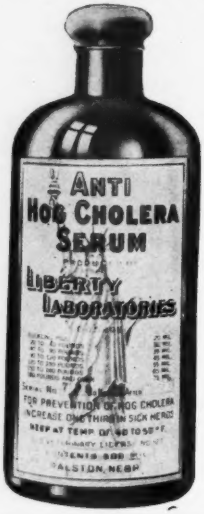

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Live Stock Sanitary Laws of Montana.

This is Vol. 1, No. 4, of the publications of the Live Stock Sanitary Board and includes in addition to the live stock sanitary laws of Montana, the rules and regulations and orders of the board. It is pretty generally recognized that Montana has enacted some very practicable and very desirable live stock sanitation and that the rules, regulations and orders of the Montana Live Stock Sanitary Board, of which Dr. W. J. Butler, state veterinarian, is executive officer, are splendid examples of what such regulations should be, both from a scientific standpoint and because of their practicability and ease of enforcement.

Veterinarians interested in the enactment of sanitary regulations in their own state, or affected by unwise sanitary regulations of their own board, might well obtain a copy of this report for study and comparison.

The Course That Surra Runs in Camels.

Bulletin No. 98 and 99, Agric. Research Institute, Pusa, India.

These bulletins constitute a most interesting report for veterinarians interested in disease problems outside those usually met in the run of practice, and they consistently show what careful scientific work is being done by the author, H. E. Cross, M. R. C. V. S., Camel Specialist, Sohawa, Punjab.

The Treatment and Prevention of Chicken Pox of Fowls (Contagious Epithelioma).

By J. R. Beach, Division of Vet. Science, Univ. of Calif., Berkeley, Calif.

This is a reprint from the Journal of the American Association of Instructors and Investigators in Poultry Husbandry. It gives a very comprehensive and scientific discussion of the subject and is well illustrated. The conclusions are:

(1) As they exist in California, there does not appear to be any etiological relationship between chicken pox and those pathological conditions of the nasal passages commonly designated as colds, roup or swelled-head.

(2) Many so-called "outbreaks of roup" may in reality be a disease manifested by symptoms very similar to roup, but due to nutritional factors.

(3) There appears to be ample evidence that chicken-pox and those pathological conditions of the mucous membranes of the mouth and eyes commonly designated as canker or avian diphtheria are etiologically identical.

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(4) Vaccine prepared from dessicated chicken-pox virus while not conferring, in the majority of cases, complete protection against severe artificial infection, does confer a considerable degree of resistance. This is shown by the mildness of lesions produced by inoculating vaccinated birds with virus as compared with those produced by inoculating non-vaccinated control birds.

(5) Chicken-pox vaccine has proved to have considerable curative value when used on diseased birds.

(6) Chicken-pox vaccine has proved a very effective means of promptly checking outbreaks of chicken-pox and canker. The use of this product has become very general among poultrymen of California.

(7) The length of immunity produced by chicken-pox vaccine may vary from two months to more than two years. For this reason, vaccine is recommended only to check the spread of the disease in flocks already infected.

(8) The efficiency of chicken-pox vaccine is dependent upon the degree of virulence of the virus contained in it. Since there is considerable variation in the virulence of different lots of virus and there is at present no method of standardizing the virulence of virus, there is necessarily considerable variation in different lots of vaccine.

(9) It is realized that the present method of preparing chicken-pox vaccine is very imperfect Thus far, however, all efforts to devise a better method have proved failures.

The Influence of Calcium and Phosphorus in the Feed on the Milk Yield of Dairy Cows.

Bulletin No. 945, U. S. Dept. of Agric., Washington, D. C.

Feeding cows for several years, according to the commonly accepted standards, with little or no additional pasture, has resulted in their milk yield being reduced much below the optimum. The condition of reduced milk yield so brought about may be corrected by giving the animal a dry period of two months, and feeding during that period a ration containing legume hay and grain with a high phosphorus content and with three or four times the amount of protein required for maintenance, and two or three times the total

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nutriment. The milk yield in the subsequent lactation period may sometimes be doubled by this treatment.

In the case of cows of which the milk yield has been reduced by several years' standard feeding, a greatly increased yield can be brought about by feeding "alternated rations with phosphate" during the dry period. This is taken to mean that the ordinary rations are more likely to be deficient in one or both of the principal bone-building elements than in any other constituent.

An Experimental Study of Echinacea Therapy.

By James F. Couch and Leigh T. Giltner. Reprint from the Journal of Agriculture Research, Vol. XX, No. 1, Washington, D. C.

Various preparations of echinacea—namely, the "Specific Medicine Echinacea," the fluid extract echinacea, and the "Subculoyd Inula and Echinacea"—were studied as remedies in several types of infectious and allied diseases, both acute and chronic, in guinea pigs.

In both tetanus and botulism produced by the administration of bacterial toxin the course

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of the disease was not modified by the echinacea.

In septicemia produced by injection of a culture of Bacillus bovispeticus, and in anthrax produced by injection of B. anthracis the results indicated that echinacea had no influence.

In poisoning by the benin of the rattlesnake produced by injection of a solution of the dry venom the echinacea preparations were without curative effect.

In the chronic diseases, tuberculosis produced by injection of a human strain of the bacillus and trypanosomiasis produced by injection of Trypanosoma equiperdum the remedy was exhibited over an extended period of time without apparently influencing the course of these diseases.

Definite evidence of organic effects from the echinacea itself was not obtained.

The Lilly Scientific Bulletin.

Series No. 2, Number 1. Eli Lilly & Company, Indianapolis, Ind.

This bulletin discusses intestinal extraction of absorbed alkaloids, new benzyl esters possessing an antispasmodic action, and atropine sulphate from datura stramonium. It is a technical publication.

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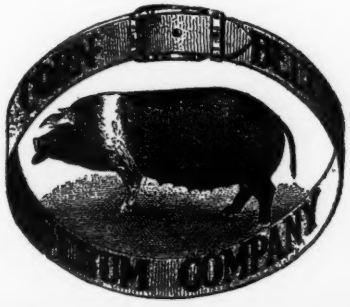

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FOR SALE—A central Minnesota practice, rich farming community, large territory. Last year's business about $4,000. Good reason for selling. Address No. 642, care of Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

FOR SALE—Veterinary practice, office and hospital, large corner lot on paved street, hospital fully equipped with stocks, operating table and other appliances, stock of drugs, books and instruments. This property was the former office of Dr. Hal. C. Simpson from which he conducted a very large practice for twenty-two years. Will be priced and sold according to the times. Come and investigate. Roy E. Mote, Crawford County State Bank, Denison, Iowa.

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VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

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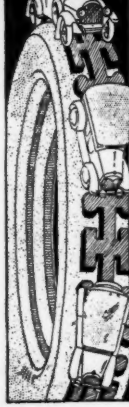

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Dr. J. E. Gibson, Acting Inspector in charge Tuberculosis Eradication and Hog Cholera Control Work in Tennessee recently addressed the summer course students of George Peabody College, on the "Human Phase of Bovine Tuberculosis." Dr. Gibson's lecture was well received.

PEDIGREED STOCK VS. PEDIGREED CAT

A Persian kitten, perfumed and fair,
Strayed out through the kitchen door for air,
When a tom cat, lean and lithe and strong,
And dirty yellow came along.

He sniffed at the perfumed Persian cat,
As he trutted about with much eclat,
And, thinking a bit of time to pass,
He whispered, "Kiddo, you sure have class."

"That's fitting and proper," was her reply,
As she arched her whiskers over her eye,
"I'm ribboned, I sleep on a pillow of silk,
And daily they bathe me in certified milk."

"Yet we're never contented with what we've got,
I try to be happy, but happy I'm not.
I should be joyed, I should, indeed,
For I certainly am highly pedigreed."

"Cheer up," said the tom cat with a smile,
"And trust your new found friend awhile.
You need to escape from your back yard fence,
My dear, what you need is experience."

New joys of life he then unfurled,
As he told her tales of an outside world.
Suggesting at last with a luring laugh,
A trip for the two down the primrose path.

The morning after the night before,
The cat came back at the hour of four,
The look in her innocent eyes had went,
But the smile on her face was a smile of content.

And in after days when the kittens came,
To the Persian kitten of pedigreed fame,
They weren't Persian, but black and tan,
And she told them their Pa was a traveling man.

HAMILTON BASSETT.

TEXAS STATE VETERINARY MEDICAL ASSOCIATION HOLDS MEETING.

The eleventh annual meeting of the State Veterinary Medical Association of Texas was held in Fort Worth, Texas, June 22 and 23, 1921.

The following were admitted to membership: Drs. Clyde N. James, William H. Haskell, H. Grafke, C. F. Proper, John A. Philips, A. H. Douglas, Floyd D. Marquiss, M. A. Williamson, R. R. Childers, Otto C. Wolfe, J.

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J. Reid, Harry Koll, Thomas O'Reilly, H. G. Wickes C C. Officer, A. H. Hughes, W. G. Ross, Frank Kecker, Charles E. Richardson, I. I. Lucy, Walter T. Johnson, Sull Ross Dunn, Harry L. Rollins, J. W. Caldwell, Horst Schreck. With few exceptions these men have come to Texas during the last two years.

Program: The W. M. Thaxton presented the subject, Common Parasites of Sheep. The subject was thoroughly discussed by N. F. Williams, M. A. Peck and C. M. Lindley. Dr. G G Graham presented the subject of Botulinus Poisoning in a comprehensive manner. P. P. Starr, J. S. Watson, A. E. Flowers, W. G. Gregory, F. R. Jones and Geo. F. Jungerman discussed the paper. H. L. Blackburn presented the subject, Bovine Mastitis, in an interesting and instructive paper. The subject was discussed by F. E. Barnes, L. C. Crabb, G. F. Jungerman, P. P. Starr, W. G. Brock, W. R. Sanderson and J. S. Watson. F. E. Barnes responded to the subject, State Board Talk. He offered recommendations that will lead to fuller protection of the veterinary practitioner. An interesting and pertinent message in which co-operation of every member of the profession was urged.

State public health officer, Dr. Manton M. Carrick, a leading authority on public health delivered an interesting paper on the importance of public health work.

Those responding to the call of the toastmaster at the annual banquet, were A. H. Douglas, W. H. Haskell, N. F. Williams, L. C. Crabb, G. F. Jungerman, G. G. Graham, F. R. Jones, J. W. Caldwell, C. F. Proper, W. G. Gregory, M. E. Maeir, F. E. Barnes, H. L. Blackburn, T. O. Scott, M. A. Peck and N. F. Williams.

Public Health and the Veterinarian: In presenting this subject A. H. Douglas reviewed the progressive changes from the days of primitive man to the present time, pointing to the importance of public health and showing the qualified veterinarian's position and duties in this work.

Co-operative Accredited Herd Testing: L. N. Peterson reviewed the work already accomplished, explained the operation of the accredited herd plan and offered beneficial suggestions to those who will become identified with the accredited herd work. In discussion L. G. Cloud outlined the position of the state in the matter at hand. Advising the practitioner as to what will be required of him. He

suggested that a tuberculosis conference be held on two successive days prior to the dates of the federal examination, so that those attending might review the subject of tuberculin testing and by actual demonstration observe the proper application of the various tests and become familiar with the factors upon which diagnosis is based.

The Practitioner as a Factor in Tuberculosis Control: G. V. Adamson graphically presented the practitioner's importance and his rights in tuberculosis eradication work in his very complete paper. F. A. Murray, W. H. Haskell discussed the paper fully.

Canine and Feline practice: was presented and discussed by J. W. Caldwell, T. T. Christianson, W. G. Brock and G. F. Jungerman.

Dr Mark Francis of College Station extended an invitation to the association to come to College Station in 1922 for a practitioner's course and to hold the next meeting The Association thanked Dr. Francis for the invitation and referred the matter to the executive committee for their approval.

Resolutions were adopted on the deaths of Drs. J. M. Lively, G. S. Jackson, J. H. Burnett, E. M. Wiggs and L. E. Johnson. The secretary was instructed to mail copies of the

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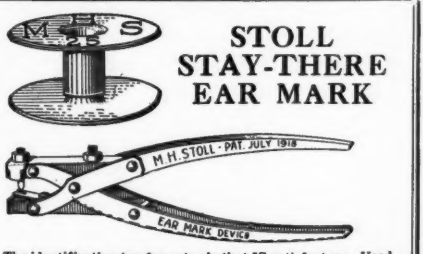

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resolution to the families of the deceased.

Dr. Geo. F. Jungerman presented the subject of Bovine Sterility. After a discussion of the question Dr. Jungerman in clinic demonstrated operative technic in sterility cases.

The following officers were elected for the coming year: President, M. A. Peck; First Vice President, W. M. Smotherman; Second Vice President, T. O. Scott; Secretary-Treasurer, A. H. Blackburn. Attorney Harry M. Myers was appointed legal advisor for the Association.

The association is stronger numerically and financially than it has ever been before.

G H. Allen, Sec'y-Treas.

Fort Worth, Texas.

ILLINOIS VETERINARIANS MEET IN PEORIA

The summer meeting of the Illinois State Veterinary Medical Association was held at Peoria, July 6th and 7th. Although the attendance was not up to the average for this association and the weather unbearably hot, those present spent an enjoyable and profitable two days.

The local committee had arranged for a very delightful boat ride the evening of the first day of the meeting and for a tuberculosis demonstration on the second day of the meeting that made it well worth while for any veterinarian in the state to attend.

Five reacting animals were slaughtered and very careful autopsies held. The intradermic, thermic and ophthalmic tests were discussed at length. The technic of the intradermic tuberculin test was very carefully demonstrated.

The thanks of the association for the tuberculosis discussion and demonstration are due Dr. A. T. Peters, retiring state veterinarian, Dr. J. J. Lintner, in charge of tuberculosis eradication in Illinois, the State Department of Agriculture for supplying the animals and the Peoria Stock Yards for supplying the facilities.

The boat ride was complimentary by Sutliffe-Case Company of Peoria and a theatre party was given the ladies the afternoon of the first day by the Peoria Commercial Club.

The annual meeting of the association will be held in Chicago, December 1st and 2nd, 1921.

D. M. Campbell, Secretary.

Chicago.